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9 MARCH 1988



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# ***JPRS Report***

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# **Soviet Union**

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***Economic Affairs***

# Soviet Union

## Economic Affairs

JPRS-UEA-88-008

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9 MARCH 1988

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## ECONOMIC POLICY, ORGANIZATION, MANAGEMENT

### Sitaryan Interviewed on 'Sore Spots' of Radical Reform

18200053a Moscow PRAVDA in Russian 28 Dec 87 p 2

[Interview by PRAVDA special correspondent D. Valovoy with Stepan Aramaisovich Sitaryan, deputy chairman of the Commission on Improving Management, Planning and the Mechanism of Economic Operation: "On the Threshold of a New Stage of Radical Reform"]

[Text] The enterprises and associations producing 60 percent of industrial output will be operating under full economic accountability and self-financing beginning on 1 Jan 88. The new State Enterprise (Association) Law is going into effect. In connection with this, a PRAVDA special correspondent requested that Deputy Chairman S. Sitaryan of the Commission for Improving Management, Planning and the Mechanism of Economic Operation answer a series of questions.

[Question] Stepan Aramaisovich, first a few words on preparing for this important stage of radical reform.

[Answer] Much theoretical and practical work has been done and an active search for new solutions and approaches has been underway over the period since the April (1985) Plenum of the CPSU Central Committee. The large-scale economic experiment that was conducted in industry has made it possible to approach in earnest the idea of self-financing as the highest and most developed form of economic accountability. The State Enterprise Law was also developed over that time. The fundamental directions of restructuring in all echelons of planning and management were defined. A new view of public ownership, cooperative forms of labor, individual labor activity and the efficient combination of planning and the market was also devised. The June (1987) Plenum of the CPSU Central Committee, having summarized the work that was done, has devised an integral system for economic management that is called upon to become a powerful lever for accelerating socio-economic development. The chief task herein is to turn it into an operative system, to incarnate it.

[Question] Tell us briefly about the results of the trailblazer ministries.

[Answer] The enterprises operating under full economic accountability and self-financing have fulfilled 98.6 percent of the contracts over eleven months. This is more than industry overall. Profits grew faster among them and costs declined. It is still too early to total up the final result, however. There have also been many shortcomings among them. The chief one I would like to emphasize is that a turn toward economy in production, to its ultimate results, is transpiring and attempts to consider and earn funding is developing in all labor collectives.

The growth rate of profits among the machine builders operating in the new fashion and among their colleagues who are just now preparing for the reform were 113.4 and 101.7 percent respectively. Labor productivity is 103.6 and 102.5 percent. Expenditures per ruble of commodity output declined by 1 and 0.5 percent respectively. It turns out that they work better under the new conditions.

[Question] Let's return to the tasks of the new stage of reform. What is its distinguishing feature?

[Answer] The mass transition of sectors to full economic accountability and self-financing is beginning. The enterprises of the machine-building, metallurgical, paper-and-pulp and construction complexes, the oil and gas industries, rail transport, civil aviation, roads, communications and the fishing industry will convert to the new principles starting January 1. Scientific organizations will convert to qualitatively new conditions.

The conversion to new management methods by enterprises in the agro-industrial complex is taking on broad sweep as well. Converting to full economic accountability and self-financing beginning 1 Jan 88 are: RSFSR Gosagroprom [State Agro-Industrial Committee], BeSSR Gosagroprom, LiSSR Gosagroprom, EsSSR Gosagroprom and LaSSR Gosagroprom, as well as a series of oblast agroproms in the Ukraine, Kazakhstan and other republics.

[Question] And how has the organization of this work gone?

[Answer] It must be noted first and foremost that the preparations for the transition of enterprises to the new conditions, especially in industry, were begun in good time. The economic standards were passed along to them in compressed time periods. They had plan targets at their disposal sooner than in former years. The 1988 contracting campaign thus began sooner thanks to this. Considerable organizational economic work was done. Another important step was also taken: hundreds of outmoded standards documents—various departmental instructions that, like a net, hindered the initiative of labor collectives and hobbled their freedom in economic operation—were reviewed and abolished. Material changes were also introduced in the system of sanctions and penalties. There were not a few well-founded reprimands in this matter, and the corresponding departments should take decisive steps to eliminate them.

Transformations have also begun to be implemented in all echelons of management—central economic departments, ministries and territorial organs. A methodology of planning is being devised and wholesale trade and other elements of the mechanism of economic operation are being developed. There are unfortunately many disruptions and shortcomings in this complex and multifaceted work.



[Answer] Specifically?

[Answer] Standards were not passed along in timely fashion in a number of ministries. Imbalance in their plans is evoking particular alarm among enterprises.

[Question] Many have written to *Pravda* about this, complaining about the lack of substantiation for standards as well, by the way.

[Answer] This is perhaps one of the worst "sore spots." Definite steps have been taken to overcome the shortcomings in this matter. The standards for enterprise fund formation have, as a rule, been averaged over the years of the five-year plan. They are more stable and comprehensible. A unified payment for productive funds for all enterprises over all the years of the five-year plan has been recommended. A new economic category—payments for labor resources on the scale of 300 rubles per worker for all enterprises and 200 rubles in surplus-labor regions—will be introduced in 1988.

Far from all ministries have developed standards well, however. It was detected in the course of preliminary monitoring that, say, USSR Minchermet [Ministry of Ferrous Metallurgy], USSR Mintsvetmet [Ministry of Non-Ferrous Metallurgy] and USSR Minkhimprom [Ministry of the Chemical Industry] had not established payment standards for productive funds and labor resources for many profitable enterprises. Collectives were also found that were unjustifiably freed from payments to the centralized funds and ministerial reserves. On the other hand, for some leading plants these deductions proved to be excessive. The old disease of "shifting" the burden onto the shoulders of leading enterprises has taken solid root in practice here. Under conditions of self-financing, however, this cannot be tolerated, and the press is justly criticizing such instances.

The requirement to average standards over the years of the five-year plan is not being maintained everywhere. And we continue to receive complaints from enterprises regarding the unfounded levels of standards being set. We check out every such signal and correct the ministries. Many of the complaints, however, unfortunately concern not the essence of the standard, but its inadequate level. Everyone wants to get as many resources as possible, but planning capabilities are limited.

[Question] And what about the unprofitable enterprises?

[Answer] Unfortunately, there are not a few of them. Even among those that are moving onto the new rails of the mechanism of economic operation on January 1. Proposals to postpone their conversion to the new working conditions are even being expressed here.

[Question] What will happen with them tomorrow?

[Answer] The ministries are obliged to take all the essential steps to revive the situation in these collectives. After all, what do the losses conceal? A sizable technical and technological backwardness. Poor quality of product output. These enterprises should have been treated sooner. The task has now been posed of eliminating their losses in practice by the end of the five-year plan.

[Question] And to what, strictly speaking, are the economic standards "bound"? Where do they begin in determining them?

[Answer] You have in mind the standards for the formation of the economic-incentive funds?

[Question] Just so.

[Answer] Two models for forming them are utilized first and foremost: from profits and from gross income. The specific nature of sector enterprises is also taken into account. The funds in the oil industry are thus formed from profits according to tonnage scales, and in the gas industry according to cubic meters. In Minelektrotekhprom [Ministry of the Electrical Equipment Industry] they are formed according to standards for profit-and-loss income.

[Question] And how are the starting conditions for various enterprises made equal?

[Answer] The enterprises have come to the starting line with different purses. They have differing profitability. Highly profitable enterprises have up to 75-90 percent of profits beyond the plan transferred to the budget and only an inconsiderable portion remains at their disposal. The amount of profits remaining at the disposal of poorly profitable enterprises, on the contrary, is excessively high. And, of course, the incentive role of economic standards in obtaining higher profits is weakened thereby.

[Question] Has this economic stratification been taken into account?

[Answer] Yes. A resolution was recently adopted to establish a special procedure for the distribution of profits obtained beyond the targets of the five-year plan for 1988-90. Up to 70 percent of the additional profit will remain at the disposal of the enterprises.

[Question] There are many questions about state orders in PRAVDA's mail. The readers are asking what they are, how they are formulated and what their "filling" is like.

[Answer] The state order is a new category engendered by the State Enterprise Law. It is being introduced into planning practice for the first time in 1988. In essence it should include the delivery of the most important types of products, services and operations. This is only a part

of the production program passed along from above. The enterprises formulate the rest themselves on the basis of business contracts and direct ties. They have freedom to maneuver thereby.

The state order for 1988 includes the delivery of the types of products, transport operations and targets for the acceleration of scientific and technical progress that are most important to the national economy. Particular emphasis is placed on indicators of social development and raising the people's standard of living, including non-foodstuffs, services to the population and the procurement and delivery of agricultural products.

The state order further reflects targets for the start-up of the most important production capacity and social facilities through centralized capital investment.

[Question] Some collectives, however, are already complaining. State orders, they say, have filled up their entire production program...

[Answer] Yes, unfortunately, many ministries have been unable to determine precisely the structure of the program—what part should be filled by state orders and what part by contracts. But strict percentages are probably not needed here. The main thing is that the composition of the state order not be excessively broad, and it should be reduced in the future.

It must be acknowledged that in this new cause, not everything on which the formation of the state order depended proved to be at the requisite level. The time periods were moreover limited. And old principles are still the boss nonetheless.

We are beginning a new cause under conditions where, honestly speaking, many enterprises do not have experience in the independent formation of a plan. Harmonious and solid business ties are sometimes lacking. And there are difficulties to spare in material and technical supply.

[Question] Doesn't this smother the initiative of the enterprise?

[Answer] Undoubtedly so. Many ministries and enterprises themselves, however, are trying to expand the composition of the state order, motivated therein by the fact that they will be more reliably supplied with material resources. And frankly speaking, the "fear" of losing the thread of management, the product range, as well as customary ties in the economy, is still having an effect here. We will all gain experience and move forward together. I think this matter will be decisively corrected as early as in the formation of the 1989 plan. USSR Gosplan, the ministries and departments and the councils of ministers of the union republics will have to reduce the proportion of state orders in the production programs of enterprises in developing draft plans for 1989. First of all by eliminating intra-sector product

turnover in it. The practice of forming enterprise plans on the basis of direct long-term business ties and contracts is expanding, and wholesale trade in capital goods will be further developed.

USSR Gosplan will have to prepare a draft of provisions on the state order, envisaging the conditions for ensuring competitiveness in its allocation on the basis of economic competition, mutual vested interest and the responsibility of the customer and the executor.

[Question] It looks like the mechanism of economic operation also has features of a transitional period in 1988?

[Answer] Surely. First of all, it has been formulated within the framework of the five-year plan approved earlier. Second, it is going into effect under conditions of the incomplete development of wholesale trade in capital goods and a long-outmoded pricing system.

The changes in supply have only been designated. The enterprises are constantly running into difficulties in realizing the funding of economic-incentive funds and resolving production and social tasks. A review of wholesale prices, as well as a restructuring of the system of material and technical supply, is also needed. Preparatory work for the conversion of all remaining industrial enterprises, the labor collectives of USSR Gosagroprom, geology, irrigation and water-resources management and power engineering to the new management conditions starting 1 Jan 89 is underway.

[Question] Just when will the wholesale trade of capital goods go into practice?

[Answer] Material resources totaling 35 billion rubles will be sold through wholesale trade in 1988. That is not enough. USSR Gosplan will take a step forward in 1989. In 1990 the sales volume of these products will grow to almost 130 billion rubles.

In the next stage, in 1991-92, the overwhelming majority of production and technical products are projected for wholesale trade. In 1992 wholesale trade will embrace roughly two thirds of material resources sold through the supply system.

[Question] Here is another troubling thing. Enterprises are being converted to full economic accountability before the reform of price formation. Aren't we putting the cart before the horse? After all, the gross makes itself felt even today.

[Answer] Unfortunately, there is more than a grain of truth in that. Growth rates and wages still depend on product volume in rubles. The chase after the gross has thus not yet been surmounted. Cost pricing has a powerful effect on the profitability level of both individual items and enterprises overall. Due to the prevailing

practices of price formation, plants frequently leave products that are unprofitable for them out of the plan and try to foist expensive products on the consumer.

Unfortunately, the problems of profitability and unprofitability of items are worsening under the conditions of prevailing prices for the enterprises on full economic accountability. The correct combination of interests between those of the labor collectives and statewide ones is not yet assured. And we will have to live with the old prices for another two years. What is the way out? It has been deemed expedient to expand markedly the practice of employing contract wholesale prices between producers and consumers starting in 1988, and first and foremost for new products. USSR Goskomsen [State Committee on Prices] should provide for the execution of this work and methodological leadership.

[Question] And the new principles are gaining momentum nonetheless.

[Answer] Yes, the flywheel of restructuring is spinning faster and faster in the economy. We are on the correct path. The guarantee is the first experience accumulated at the enterprises of the five trailblazer ministries and the excellent work under the new conditions of the Sumy Machine-Building NPO [Scientific Production Association] imeni M.V. Frunze, where correctly structured intra-sector economic accountability is fostering the rapid technical renewal of the enterprise.

[Question] Full economic accountability and self-financing are moving out into the clear and becoming the basic principles for the work in the national economy. Underwater reefs and shoals are of course being encountered. How important is it to foresee them?

[Answer] Much has been done today to see that economic accountability has earned and more fully covers its advantages. But the economic illiteracy of key personnel must also still be eliminated.

They have had a formalistic approach to economic training in some places. Observation of a number of enterprises has shown that many of them still have no distinct awareness of how full economic accountability differs from the conditions that were operative in the earlier period. The workers do not know what funds are formed from profits. Even executives have "melted" on this exam.

The activation of the human factor is taking on especial topicality. And one of the most important tasks is raising the economic literacy of key personnel. The situation must be rectified. Economic departments, ministries, enterprises and local party and trade-union organs must develop the systematic rather than episodic economic training of key personnel. The executives, specialists and workers of enterprises are simply obligated to master the controls of full economic accountability and self-financing more rapidly.

Success cannot be counted on in any cause without profound and systematic knowledge. The more so in economic accountability, where every untrue step can be a powerful blow to the whole collective.

[Question] This means that the call to learn, learn and learn has taken on especial topicality today once again?

[Answer] Undoubtedly. If the workers, foremen and section chiefs do not learn well how to utilize the new management controls, economic accountability will come to be closed off at the level of the enterprise executives. Such upper-level economic accountability will not, of course, have the desired results. It must be taken into account that the chief aim of radical economic reform is to make the Soviet person a true master of production who is not indifferent to the fate of the section, plant and the Soviet economy overall in deed and not just in word.

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#### Statistics Committee Official on Improving Data Publication

18200054 Moscow VES'NIK STATISTIKI in Russian  
No 12, Dec 87 pp 40-43

[Article by V. Tselikh, candidate of economic sciences, the RSFSR State Statistics Committee: "To Improve the Quality of Statistical Publications"]

[Text] The serious criticism of the work done by statistical bodies and the important tasks set for them in the decisions of the June (1987) Plenum of the CPSU Central Committee and the 7th session of the USSR Supreme Soviet of the 11th convocation predetermine the need for a fundamental restructuring of statistics for the purpose of increasing its effect on accelerating the country's social and economic development and raising the role of statistical bodies in the system of national economic management.

Proceeding from the tasks set and the fundamentally new directions in improving the activity of state statistics bodies, it will be necessary to activate their participation in the process of fundamentally restructuring economic management, to seriously improve existing and to develop improved, new techniques and methods of work, and to assign primary importance to the economic analysis and upgrading of statistical information, regulation of reporting and ensuring its reliability, and expansion of glasnost in statistics.

State statistics bodies in the Russian Federation took these tasks as a guide to action and did specific work on fulfilling the measures of the RSFSR State Statistics Committee on improving state statistics following from the decisions of the 27th CPSU Congress. In particular, the time of working out reporting and presenting its results in a number of branches of statistics has been shortened markedly, comprehensive monthly reports on



the results of fulfillment of the plan for the republic's economic and social development are submitted much earlier than usually, and data base organization and support for the republic's management bodies have been expanded through the introduction of a new type of rapid communication (express information), which makes it possible to promptly detect negative phenomena arising in the course of fulfillment of planned assignments. Heavy requirements are placed on such information. It should contain a problem supported by factual data in the necessary sections and dynamics and be maximally laconic and clear. At the same time, it is important to select the most timely subject and to make it analytical and sharp. For the time being, by no means all local statistical bodies manage to do this. "Press releases" with current data on various problems of national economic development are regularly prepared for an extensive publication and a system of forecasting calculations with the use of computers for a number of industrial production indicators has been introduced.

Republic, kray, and oblast administrations and city and rayon departments of statistics do specific work in this direction, but the achievements are still modest. In 1986 in all the republic's statistical bodies there were more than 1,500 press articles and radio and television addresses.

The RSFSR State Statistics Committee fundamentally revised the structure of the published brief statistical collection "RSFSR v tsifrakh v 1986 godu" [The RSFSR in Figures in 1986], which was supplemented by a number of new indicators.

The volume of data of the statistical yearbook "Narodnoye khozyaystvo RSFSR za 70 let" [The RSFSR National Economy in 70 Years] was increased significantly and its level of analyticity was raised. In it interconnected national economic sectors and subsectors are grouped in a new way into unified links—sections, which will give a fuller idea of the tendencies and patterns formed in the economy and social sphere and of the efficiency of their development. The following sections are singled out in the collection: general economic indicators of national economic development, intensification of public production, development of material production, social development, rise in the people's standard of living, natural resources, environmental protection, finances, and credit.

Local state statistical bodies have significantly activated their work on problems concerning the publication of statistical collections.

The statistical information department jointly with sectorial administrations and departments of the RSFSR State Statistics Committee constantly gives organizational and methodological assistance in the preparation and issue of collections to local statistical bodies. A sample study of 30 collections received from rayon statistical bodies has been made. The check has shown

that the quality of most collections suffers from serious shortcomings. In this connection a survey letter and a model of a detailed comprehensive collection "Narodnoye khozyaystvo rayona (goroda) za... gody" [The National Economy of a Rayon (City) in... years"] first worked out by the statistical information department was sent to republic (ASSR), kray, and oblast administrations of statistics. Furthermore, "Model Methodological Recommendations for the Preparation and Issue of Comprehensive Collections" are periodically sent to local administrations of statistics and conclusions for individual drafts of collection manuscripts are given.

In accordance with the decision of joint boards of the RSFSR State Statistics Committee and the RSFSR State Committee for Publishing Houses, Printing Plants, and the Book Trade republic (ASSR), kray, and oblast administrations of statistics publish collections, as a rule, on the results of conclusion of five-year plans, in connection with anniversary dates, and on assignment from local management bodies. During the preparation of collections most republic (ASSR), kray, and oblast administrations of statistics follow the recommendations of the USSR State Statistics Committee and the RSFSR State Statistics Committee. The collections are designed colorfully with data examined in a long dynamics and with materials on the social and economic development of national economic sectors.

The following comprehensive collections are the most successful: "Narodnoye khozyaystvo Moskovskoy oblasti (1981-1985)" [The National Economy of Moscow Oblast (1981-1985)]; "Narodnoye khozyaystvo Leningrada i Leningradskoy oblasti v odinnadtsatoy pyatiletke" [The National Economy of Leningrad and Leningrad Oblast During the 11th Five-Year Plan]; "Moskva v tsifrakh, 1985" [Moscow in Figures, 1985]; "Ekonomicheskoye i sotsialnoye razvitiye Stavropolya v odinnadtsatoy pyatiletke" [Economic and Social Development of Stavropol During the 11th Five-Year Plan]; "Narodnoye khozyaystvo Bashkirskoy ASSR za gody odinnadtsatoy pyatiletki" [The National Economy of the Bashkir ASSR During the Years of the 11th Five-Year Plan], and so forth. As the collections are published, survey letters and individual reviews with a detailed evaluation of their quality are sent to republic (ASSR), kray, and oblast administrations of statistics.

At the same time, a detailed familiarization with statistical collections published by republic (ASSR), kray, and oblast administrations of statistics shows that the quality of many of them does not meet the requirements placed on them. A lack of coordination of the same data placed on different pages, overstatement or understatement of units of measurement or their absence, discrepancy with respect to the data of the yearbook of the RSFSR State Statistics Committee, unsystematic arrangement of sectors and tables, disparity in terminology, unsuccessful construction of tables, and noncorrespondence of their

headings to content occur in collections. Sometimes tables are placed so that their headings and content are on one page, while the indicators, on another.

The indicated shortcomings occurred in collections on the results of the 11th Five-Year Plan published in 1986-1987 by republic (ASSR), kray, and oblast administrations of statistics: Chechen-Ingush, Karelian, Buryat, Komi, North Osetian, Kalinin, Omsk, Kursk, Novgorod, Kaluga, Yaroslavl, Tomsk, Perm, and so forth. Furthermore, in many collections very few qualitative indicators are presented, the method of mean values is applied rarely, and there are no groupings, which lowers their cognitive and scientific value. V. I. Lenin considered the lack or insufficiency of groupings a major shortcoming of statistical data processing. He also attached great importance to the method of mean values and methodology of their calculation and correct application (population homogeneity) in the investigation of social and economic phenomena and processes. The oversights uncovered in collections are primarily the consequence of insufficient logical and arithmetical control over the quality of prepared materials on the part of consolidated departments, as well as summary departments (bureaus), inefficient work with the proofreading of collections, and inattentive study of recommendations and directives of the USSR State Statistics Committee and the RSFSR State Statistics Committee on improving the quality of published collections.

The RSFSR State Statistics Committee repeatedly recommended a model structure of collections and proposed a more extensive utilization of the experience in the construction of the yearbook "Narodnoye khozyaystvo RSFSR" [The RSFSR National Economy]. However, some administrations of statistics avoided utilizing the experience of the RSFSR State Committee for Statistics. In the collections published by them the scanty data pertaining to the sections "Consolidated," "Science and Technical Progress," "Transport and Communication," and "Domestic Services for the Public and Housing and Municipal Facilities" are dispersed or completely absent.

Individual administrations of statistics, receiving reviews of previously published collections from the RSFSR State Statistics Committee, owing to the indifferent attitude toward work in the newly published collections, make the same mistakes. For example, in 1985 the Karelian Republic Administration of Statistics published the collection "Karelskaya ASSR v tsifrakh za 1984 god" [The Karelian ASSR in Figures in 1984]. In November 1985 the RSFSR State Committee for Statistics sent a review of this collection, which noted that five indicators were given without units of measurement and the same data arranged on different pages differed in 15 cases. Then in 1985 and 1986 the administration of statistics published another two collections—"Narodnoye khozyaystvo Karelskoy ASSR" [The Karelian

ASSR National Economy] and "Karelskaya ASSR v tsifrakh za 1985" [The Karelian ASSR in Figures in 1985] and similar mistakes were again made in them.

In addition to statistical collections, publications in the local press contain extensive information on the course of fulfillment of the State Plan for Economic and Social Development. It should be noted that most republic (ASSR), kray, and oblast administrations of statistics prepare and publish good-quality reports promptly and quite objectively illuminate both the positive and negative tendencies formed in individual national economic sectors. Constant work with administrations of statistics contributes to this. The statistical information department systematically sends survey notes on the quality of publications and reviews of some of them. These problems are also studied in the course of checks on the work of local statistical bodies.

Mistakes in units of measurement, discrepancies in the same data published in various sections, carelessness of an editorial nature, overstatement or understatement of data, and so forth occur. For example, a gross error was made in the 1986 report of the Belgorod Oblast Administration of Statistics in the table on purchases of livestock products. It was published that wool purchases totaled 756,000 tons, whereas in the table placed above wool production was indicated at 1,472 tons. This points to an absence of logical data control on the part of workers at the department of statistics of the agro-industrial complex. Errors were made in the reports of Kirov and Smolensk oblast administrations of statistics and, as a result, the production of confectionery products and drain pipes was understated 1,000-fold.

It should also be stated that the results of work of some sectors were not reflected in a sufficiently critical manner in some 1986 reports. For example, the reports of the Kurgan Oblast Administration of Statistics did not show the fulfillment of the plan for the commissioning of projects for social and cultural purposes, of the Perm Oblast Administration of Statistics in the section "Well-Being and Culture" (on problems of trade, domestic services for the public, public health, and commissioning of projects for social and cultural purposes) did not direct a single word of criticism at individual administrations, enterprises, associations, and organizations not fulfilling the established plans, and of the Ryazan Oblast Administration of Statistics did not include a table on the production of key industrial items in physical terms, which lowered the cognitive value of the section "Development of Material Production."

The report of the Arkhangelsk Oblast Administration of Statistics in the section "Scientific and Technical Progress" mentioned in passing the nonfulfillment of the assignment for the development of science and technology and did not at all reflect the shortcomings in the sections "Agro-Industrial Complex," "Transport and Communication," "Capital Construction," and "Rise in the Standard of Living."



Reports of a number of republic (ASSR), kray, and oblast administrations of statistics do not have specific examples for rayons, associations, enterprises, and farms, which did not cope with planned assignments, permitted losses, and did not utilize existing potentials.

The cited examples on the quality of statistical collections and reports in the local press on the results of fulfillment of state plans for economic and social development indicate that summary and sectorial departments of republic (ASSR), kray, and oblast administrations of statistics will have to carry out extensive organizational and practical work on upgrading the structure of collections and reports, significantly improving their quality, and shortening the time of publication and to pay special attention to the preparation of express information and press releases. For a successful fulfillment of these tasks it is necessary to improve discipline, organization, efficiency, and responsibility for the assigned job.

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### Role Playing Used To Tackle Self-Financing, Reform Problems

18200056 Moscow *EKONOMICHESKAYA GAZETA* in Russian No 2, Jan 88 pp 8-9

[Article: "Self-Financing: The Way Out of Critical Situations"; first two paragraphs are *EKONOMICHESKAYA GAZETA* introduction.]

[Text] A new rubric "Business Games" is being introduced in *EKONOMICHESKAYA GAZETA*. The materials of this heading intended for universal economic compulsory education will examine typical economic situations arising under the conditions of operation of enterprises (associations) based on full cost accounting and self-financing. The task is to help economic managers, specialists, and all members of labor collectives to more rapidly master new methods and forms of management and the new style of work combining economic methods of management with the democratization of production relations and to learn to take correct decisions meeting the interests of the collective, the enterprise, and the state.

The materials of this rubric can be utilized by the organizers of studies to activate the process of education at institutes and faculties for improvement of skills and at various forms of workers' production and economic studies.

Most industrial enterprises (associations) began to operate on the basis of full cost accounting and self-financing as of 1 January 1988. Under the new conditions many complex problems and sharp situations arise, whose solution requires profound knowledge, nonstandard

actions by economic managers and specialists, and the ability to search for production reserves and to apply economic methods of management in practice.

Whereas previously, being in a complex financial situation, an enterprise could hope for assistance from the ministry's centralized funds and receive an outright loan, now labor collectives should count only on their own strength. They themselves should think how to ensure payments to the budget and the fulfillment of the state order, to promptly conclude contracts, to reduce losses and damages, and to obtain a profit sufficient for economic and social development and enterprise retooling. These and other matters have become the subject of the business game, which at the request of the editorial department of *EKONOMICHESKAYA GAZETA* was held at the Academy of the National Economy under the USSR Council of Ministers.

Representatives of the Moskabel Plant and of the USSR Ministry of the Electrical Equipment Industry and teachers and students at the Academy of the National Economy took part in the business game.

The following played roles:

**Leader:** Prof Yu. Yakovets, head of the National Economic Planning Department.

**Enterprise:** Moskabel; **manager**—I. Lobzina, deputy director for economic problems; **financial expert**—E. Levitina, chief of the Financial Department.

**Partners** (students at the Academy of the National Economy): **consumer**—Yu. Fateyev; **supplier**—O. Malykhin; **supply organization**—V. Tokarev; **bank**—V. Shum; **sectorial institute**—Yu. Antonov.

**Managerial bodies:** **ministry**—P. Subbotin, deputy chief of the Main Economic Planning Administration of the USSR Ministry of the Electrical Equipment Ministry; **Ministry of Finance**—Prof A. Volkov, prorector of the Academy of the National Economy; **docent** L. Kurchenko; **board of arbitration**—S. Mogilevskiy, decent at the Department of Law and Psychology of the Academy of the National Economy.

### Brief Description of the Moskabel Plant

The enterprise has been operating under the conditions of the economic experiment since 1984. It was transferred to self-financing as of January 1988. The labor collective council selected the second cost-accounting model.

The plant was founded in 1911. The wear of fixed capital makes up 60 percent. Material expenditures account for 88 percent of the production costs. Production is not very profitable—of some types of articles it is even unprofitable. The financial status of the enterprise is also worsened owing to the big stocks of materials at the

warehouse, which cannot be used in production because of their incomplete sets. Having settled its accounts with the budget and suppliers at the end of last year, the collective was unable to return the loan on time, which threatens it with serious complications.

#### Situation 1.

##### **The State Order Is Not Provided With Resources**

###### **Manager:**

The enterprise produces articles of a diverse list. Consumer goods make up 6 percent; deliveries for exports, 13 percent. The bulk of the products are used by hundreds of consumers in the national economy. The share of the state order in the total production volume makes up 86 percent for 1988.

Under the conditions of the experiment we have begun to pay serious attention to the formulation of economic contracts with consumers and suppliers. With the transition to full cost accounting this work has acquired primary importance.

In the middle of December contracts were concluded for 95 percent of the products, which should be delivered according to the state order. However, we cannot fully conclude delivery contracts, because there are no wooden drums. Their supplier refused to conclude a contract with Moskabel for 1988 and the drums were not included in the state order.

We turned to supply bodies for help.

###### **Supply organization:**

The enterprise needs to search for other ways, that is, to strive for the return of drums and to change over to reusable metal drums, which can also be collapsible.

###### **Financial expert:**

This problem is being solved since 1980. A special laboratory has been established at the sectorial institute. However, the matter is proceeding extremely slowly. The return of containers is connected with great difficulties for the consumer.

###### **Supplier:**

This problem can be solved. The cable plant, which received an order for the final product, should have the right to transfer a part of it to subcontractors. Then I will be forced to accept the state order. Otherwise, it loses its meaning.

###### **Board of arbitration:**

It is hardly sound to include drums, like other types of containers, in the state order. Then its products list will expand excessively. We will return to the previous situation, when we tried to plan everything from the center. It is necessary to clearly determine what key products become the objects of the state order.

###### **Ministry:**

The situation with the provision of the state order with material resources is not hopeless. The enterprise should actively search for other executors, for which the manufacture of drums can be profitable.

###### **Leader:**

A typical situation in the realization of the state order along the entire chain of interconnected enterprises is visible here. It is planned to narrow the products list of the state order, giving enterprises a wider field for making independent decisions. At the same time, however, it is, apparently, necessary to grant the enterprise, which has received a state order for the final product, the right to "transmit" it to coexecutors for accessories, materials, and parts. It is also necessary to see to it that the fulfillment of the state order be profitable for all participants.

At the same time, enterprises, the ministry, and supply bodies must also give thought to the manufacture of returnable collapsible containers, because this problem will arise again and again, place an order with the institute, and solve the problem of a complete shipment of returnable containers.

#### Situation 2.

##### **Contract Is Impossible. Who Will Compensate for Losses?**

###### **Manager:**

We have not concluded a contract with the consumer for long-distance communication cables, owing to the lack of provision with stocks for aluminum tape. The order for these types of products is obviously unrealistic. What are we to do?

###### **Consumer:**

I am not interested in why you cannot deliver the cable. It is the object of the state order. An authorization of supply bodies for it was issued to me. If you refuse to conclude the contract, I will be forced to turn to the board of arbitration. For the nonfulfillment of the contract I will bring an action for damages.

###### **Board of arbitration:**

We will make a decision obligating Moskabel to conclude a contract with the consumer. After all, the state order is mandatory for inclusion in the plan and for the conclusion of the economic contract. If it is not fulfilled, damages will be exacted by the consumer's action.

**Supply organization:**

Planning bodies do not yet have the proper coordination. If a state order for long-distance communication cable products is established, it should be coordinated with resources of rolled aluminum products, which are also the objects of the state order. Otherwise, it is necessary to reduce the order for Moskabel and the authorization for the consumer of its products.

**Manager:**

The ministry and the USSR Gosplan, determining the state order, knew in advance that it was not provided with resources. In the country only two enterprises produce such a cable. Why should our collective incur big losses from the erroneous decisions of superior bodies?

**Leader:**

Can it not happen that, owing to big fines and a late payment of money by consumers with respect to the calendar order of payments, the enterprise cannot pay wages to the collective?

**Bank:**

For the first half of 1988 the government permitted granting enterprises operating under full cost accounting and self-financing conditions short-term credits for wage payments in the absence of money in current accounts for reasons not depending on the financial and economic activity of collectives. At the same time, however, the bank will demand from the enterprise the adoption of measures necessary for a prompt return of credit. This measure is for the transitional period in order to facilitate the financial recovery of enterprises.

**Ministry:**

The methodology of formation of state orders has not yet been created. In this case the ministry acts only as a "transmitter." We received a state order from the USSR Gosplan under conditions when an approved five-year plan had already existed and then we began to determine the provision with resources.

**Consumer:**

The ministry's functions under the new conditions are unclear. Today it essentially does not bear any economic responsibility for the substantiation of its decisions.

**Board of arbitration:**

I don't agree that the ministry does not bear any responsibility. Article 9 of the USSR Law on the State Enterprise (Association) stipulates that the damages done to an enterprise through the fault of a superior body can be exacted from it in accordance with the decision of the State Board of Arbitration. The fact that this is not yet applied in practice is another matter.

**Supply organization:**

However, if the blame for an incorrect decision rests with the Gosplan, ultimately, it should compensate for the damages.

**Board of arbitration:**

Such mutual relations between the ministry and the Gosplan have not yet been determined. What is the way out? We propose working out a statute on the procedure of acceptance and issue of a state order clearly defining the rights and responsibility of all its participants. If a state order is not provided with resources, it may not be accepted by the enterprise.

**Ministry of Finance:**

Assignments in addition to the state order not fully provided with resources have been set for 1988. Such assignments are formally included in the balances of equipment and materials, although it is known in advance that they cannot be fulfilled. It is necessary to increase the responsibility of the Gosplan and other central bodies for the substantiation of the decisions made and for their errors.

**Supplier:**

In case the unreality of the state order is revealed, it should be corrected promptly. This will raise the balance and level of fulfillment of state orders.

**Leader:**

Under the new conditions of management everyone should be economically responsible for the results of his actions. If the ministry gave the enterprise an obviously nonfulfillable order and made an erroneous decision, which did damage to the collective, it should compensate for it from centralized funds, in particular, from the wages of the workers that made an erroneous decision. Only on this basis is it possible to increase the responsibility of ministry workers for the substantiation of state orders and other decisions. It is logical to also apply this principle to central economic bodies.

**Situation 3.**

**Products Are Unprofitable. What Should Be Done?**

**Consumer:**

Will you be able to deliver the missing amount of the cable in excess of the order if I pay more for it?

**Manager:**

Owing to the long-distance communication cable, basically, we have become unprofitable. According to the 1988 plan, we have only 5 million rubles of profit. We make cables in three sheaths: lead, steel, and aluminum. The proportion of cables in lead sheaths is decreasing year after year, which is connected with the shortage of initial raw materials and requirements for environmental protection. The consumer properties of a cable in an aluminum sheath are slightly higher. Buying it abroad, the country pays 28 percent more for it than for a cable in a lead sheath. At domestic wholesale prices a cable in an aluminum sheath is 39 percent cheaper than a lead cable and its price is almost one-third lower than when it is purchased abroad. The wholesale price of copper increased twice after 1982, but the prices of cables manufactured with its application did not change.

The unprofitableness of these types of products was taken into consideration during the formation of standards of profit distribution at the enterprise. However, it would be better to correct prices.

**Leader:**

If the price ratio were corrected, how would this affect the production structure?

**Manager:**

In such a case we would speed up the replacement of a cable in a lead sheath with a cable in an aluminum sheath and increase its output, which would make it possible to reduce imports. The plant's production capacities permit this, the technology has been developed, and substantial capital investments would not be needed.

**Ministry of Finance:**

We should proceed not only from the interests of the enterprise, but also of the country. Since these products are profitable for the national economy and their domestic prices are slightly lower than world prices, it is necessary to create economic conditions for expanding their production. Thereby, under self-financing conditions the price can work for advanced structural shifts.

**Institute:**

Another alternative is also possible—to manufacture a modified type of cable with an aluminum sheath and to ensure its profitability through a higher price.

**Consumer:** There is no need for this. We can agree to a rise in wholesale prices, because an imported cable costs much more.

**Leader:**

Of course, it would be erroneous to make a price rise the source of profit growth. However, here we deal with a case when a systematic implementation of basic price formation principles—constructing price ratios on the basis of a comparative efficiency of consumption of comparable types of products and offering a part of the effect from the replacement of imported articles to the manufacturer—would be of immediate and direct benefit to the state, to the producer, and to the consumer. Is it worth waiting several years in order to correct the obvious noncorrespondence in prices? Unprofitableness narrows the opportunities of the collective working under self-financing conditions to expand the output of more efficient products.

#### Situation 4.

**The Price of Developments Has Risen. How To Ensure Retooling?**

**Manager:**

Under full cost-accounting conditions we receive at our disposal large funds for the self-financing of technical development. A total of 12.6 percent of the cost-accounting income and 95 percent of the depreciation allowances for renovation are deducted into the fund for the development of production, science, and technology. On the average, this will total about 6 to 7 million rubles annually. This requires that the management and technical and economic services of the enterprise uncover ways of utilizing resources most efficiently in order to obtain a reliable scientific reserve for raising the technical level, quality, and competitiveness of products. For 1988 a total of 5.2 million rubles are deducted from depreciation into the fund for the development of production, science, and technology and 1.1 million rubles from the profit. Of them 0.5 million rubles are allocated for science. We are increasing expenditures on ecological developments. However, they cost a great deal and their price is rising.

**Institute:**

With the transition of sectorial scientific organizations to full cost-accounting and self-financing the depreciation of fixed capital for scientific purposes and the payment for productive capital and labor resources are introduced. This leads to an increase in the price of scientific and technical products. The enterprise and the institute will have to review the subjects of performed



studies in order to exclude insignificant and low-efficiency topics. At the same time, a price rise can lead to a reduction in the developments of promising subjects on the creation of fundamentally new equipment and technology.

**Financial expert:**

Now we set the price of scientific and technical products on the basis of the same principles as of industrial products. This price includes production costs (among them wages and depreciation of fixed capital) and profit. As customers of these products we are interested in a correct determination of their price. The production costs and price of new equipment depend on this.

**Ministry of Finance:**

Transferring science to cost accounting, we have not taken into consideration that the introduction of depreciation and additional payments will lead to a rise in the costs of scientific and technical products and to a reduction in their physical volume under conditions when the funds of the customers of these products envisaged by the five-year plan do not increase. During the transitional period it would be worth envisaging a gradual introduction of these measures in order not to undermine promising developments (for example, not to introduce additional payments to the budget and to the ministry for scientific organizations for the remaining years of the 12th Five-Year Plan).

**Leader:**

The transfer of sectorial science to full cost accounting and self-financing and the introduction of prices of scientific developments and contractual relations between scientific organizations and enterprises are not an end in itself. They are means of accelerating scientific and technical progress, increasing its efficiency, and facing of the most efficient innovations on the part of enterprises.

At the same time, it is necessary to foresee that the 1.5- to 2-fold increase in the costs of scientific developments not envisaged by the five-year plan will also evoke negative consequences and can lead to a reduction in the physical volume of work, primarily at the expense of long-term work not immediately giving a return and connected with a considerable risk. Ministries and the USSR State Committee for Science and Technology will partially smooth out this tendency through centrally allocated resources for the fulfillment of state orders for science and technology. However, these resources are not big. The problem of extending credit for research and development in the area of advanced technologies deserves attention.

It is also necessary to create economic conditions for a relative reduction in the costs of new equipment, scientific and technical products being the initial point here.

**Situation 5.**

**There Are Insufficient Funds for Housing. Where Should They Be Taken?**

**Financial expert:**

Moskabel belongs to enterprises where social problems have not been solved for a long time. In order to retain skilled personnel, it is necessary to build houses, kindergartens, and pioneer camps. However, when the standard of the social development fund was determined, 1986 expenditures were taken as the basis, which is totally insufficient. The ministry has allocated 300,000 rubles for housing to us. However, a house costs about 1 million rubles and at the plant there is a line—300 families. A total of 228 rubles per person are received annually, but 1 square meter costs 270 rubles. Thus, we will not provide every family with an apartment by the year 2000.

**Leader:**

What a way out do you see?

**Manager:**

The second cost-accounting model enables us, by saving material resources, to increase the enterprise's cost-accounting income. We will strive to ensure the conditions for the collective's social development.

**Financial expert:**

We cannot do this by reducing the fund for the development of production, science, and technology, because fixed capital has become obsolete and should be renewed.

**Bank:**

You can take credit for the solution of social problems and take advantage of the ministry's help.

**Manager:**

An increase in cost-accounting income is the only way of overallly solving all the complex problems concerning the collective's development. There simply is no other way. Only in this way we will be able to liquidate credits taken for housing.

**Leader:**

Social development pertains to the priority goals of the work under full cost-accounting and self-financing conditions. It is time to eliminate the residual approach to the allocation of resources for the solution of social problems. However, it would not be correct to do this, withdrawing resources from science and production



retooling. Expenditures on social needs should contribute to an increase in production efficiency, help to form a highly skilled collective, and improve workers' living and working conditions.

At the same time, under full cost-accounting conditions it is necessary to extend the collective's rights in the use of the earned cost-accounting income on the basis of its own priorities if they do not contradict public interests.

**We will sum up the business game.** We have examined only several typical situations arising during work based on self-financing. There are more contradictions in real economic life. We will draw certain conclusions.

First, under the new conditions it is much more difficult to work and it is necessary **to independently search for self-financing resources**, not relying on the ministry. However, it is also much more interesting, because scope is given for a creative search and independent bold decisions.

Second, **main self-financing potentials should be sought within the enterprise**—in a competent uncovering and rapid utilization of the possibilities for a reduction in losses, saving of resources, mastering of highly efficient, new equipment and technology, introduction of intra-production cost accounting and the collective contract, real self-administration, and increase in the responsibility of every collective member for the final results of his work.

Third, the transition to full cost accounting and self-financing requires a **fundamental change in the style and method of work on the part of ministries and central economic bodies**. Determining state orders and economic standards and limits, they should be concerned with their necessary resource provision and abandon the faulty practice of a strong-willed imposition of unsubstantiated planned assignments. It is time to solve the problem of their economic responsibility to enterprises. The upper management echelon should ensure real economic and legal conditions for the realization of full cost-accounting and self-financing principles.

Fourth, during the transition to self-financing, it is necessary to take into consideration the characteristics and difficulties of the transitional period under the conditions of the approved five-year plan, **to develop distinctive "transition modules," and in the necessary cases to find flexible compromise solutions in order not to discredit the very idea of self-financing.**

Finally, fifth, the new conditions place much **greater demands on management personnel** and on the level of their economic and legal knowledge.

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## AGRO-ECONOMICS, POLICY, ORGANIZATION

### New Kolkhoz Draft Charter Published

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pp 1-3

["Text" of "Model Kolkhoz Charter. A Draft"]

[Text] This model charter defines the organizational, economic and legal bases for the activity of kolkhozes under the new management conditions, sets forth provisions for the strengthening of kolkhoz-cooperative ownership, establishes the rights and obligations of kolkhoz members and regulates their labor and distribution relations, insures a strengthening of economic management methods, guarantees kolkhoz rights, and develops kolkhoz internal democracy and glasnost.

The kolkhoz system is an inseparable part of Soviet socialist society; it is the path outlined by V.I. Lenin that has been tested historically and meets the special features and interests of the peasantry in its gradual transition to communism.

Socialist ownership of the means of production, the advantages of an economy managed on a collective basis, and the daily concern of and help from the CPSU and Soviet state have made it possible to accomplish enormous socioeconomic transformations in the countryside. Thanks to the selfless labor of the kolkhoz peasantry and the efforts of the working class and all the Soviet people, the kolkhozes have become large, technically equipped agricultural enterprises. On this basis their social wealth is growing steadily, the living standard of the kolkhoz farmers is rising, and the differences between the cities and the countryside are gradually being overcome.

As a cooperative form of socialist farming the kolkhozes constitute one of the main elements of the unified national economic complex, are totally responsible for the tasks of further developing production forces and perfecting production relations in the countryside, and make it possible correctly to combine the personal interests of the kolkhoz farmers with collective and national interests.

The kolkhoz is a school of communism for the peasantry.

### I. The Aims and Tasks of the Kolkhoz

1. Kolkhoz (here insert the name of the kolkhoz) in (insert name) Rayon in (insert name) Okrug in (insert name) Oblast (or Kray) in the (insert name) Republic is a cooperative organization of peasants voluntarily joining together in order jointly to engage in large-scale socialist agricultural production on the basis of publicly owned means of production and collective labor.

The kolkhoz is a socialist agricultural enterprise operating under conditions of full independence and self-management on the basis of the democratic principles of management combined with state leadership.

2. The main tasks of the kolkhoz are as follows:

—strengthening and developing public farming in every possible way and steadily improving labor productivity and production efficiency;

—increasing output and selling high-quality agricultural produce to the state by using intensive factors in development, mastering the achievements of scientific and technical progress and leading experience, and using scientifically sound systems for carrying on agriculture;

—making efficient use of all production-economic potential by improving its structure and introducing progressive technologies in arable and livestock farming under conditions of cost accounting and self-financing;

—effecting, under the leadership of the party organization, the communist and international indoctrination of kolkhoz farmers, acting in every possible way to promote affirmation in them of a high level of social activeness and a responsible attitude toward the land and other means of production, shaping in workers qualities such as collectivism and high labor discipline, diligence and initiative in their work, and further developing socialist competition;

—satisfying more fully the growing material and cultural needs of the kolkhoz farmers, improving their working and everyday conditions, and effecting a social transformation of the countryside;

—observing and perfecting the principles of kolkhoz self-management, developing kolkhoz democracy in every possible way, and creating the conditions essential for full realization and preservation of the rights laid down by charter and the legitimate interests of the kolkhoz members.

### II. Membership in the Kolkhoz and the Rights and Obligations of Kolkhoz Members

3. Citizens who have attained the age of 16 years and expressed a desire to participate through their labor in public farming at the kolkhoz may become kolkhoz members.

The admission of kolkhoz members is effected at a general meeting of the kolkhoz farmers convened at the representation of the kolkhoz board and with the applicant present.

An application for admission to membership of the kolkhoz is examined by the kolkhoz board within 1 month from the date of application. The person making application for kolkhoz membership enjoys the rights of

kolkhoz membership during the time elapsing from the decision made by the general meeting until the kolkhoz board accepts the recommendation made by the general meeting to admit the applicant to membership of the kolkhoz.

A standard "kolkhoz farmer labor record" is kept for each kolkhoz member.

4. A member of the kolkhoz has the following rights:

—the right to work in the public farming carried on by the kolkhoz, with wages in accordance with the quantity and quality of the labor he performs, including the right to choose the profession and kind of occupation and to work in accordance with his vocation, abilities, professional training and education, taking kolkhoz needs into account;

—the right to leisure, guaranteed days off and annual, paid leave;

—the right to participate in managing the affairs of the kolkhoz and the elect and be elected to the organs of the kolkhoz board; and to submit proposals to improve the activity of the kolkhoz and eliminate shortcomings in the work of the management organs, auditing commission and officials;

—the right to receive assistance from the kolkhoz in improving his production skills and in acquiring a specialty;

—the right to make use of an allotment of land for private subsidiary farming, to build a house and farm buildings, and also to use kolkhoz hayfields and pasture, draft animals, means of mechanization and transport for his personal needs as laid down in kolkhoz procedures;

—the right to social security, cultural and everyday services, and help from the kolkhoz in building and repairing a house and farm buildings, obtaining supplies of fuel, and satisfying other needs, in accordance with procedures established by the general meeting of the kolkhoz farmers;

—the right to reimbursement for expenditures and to receive other compensation connected with business trips and the fulfillment of his state and public duties;

—the right to material compensation for loss incurred through disablement or other damage to health connected with the fulfillment of his labor duties.

5. A member of the kolkhoz has the following obligations:

—to observe the kolkhoz Charter and the rules for internal procedures, and to comply with resolutions of the general meeting, the kolkhoz board, and the meetings and councils of the brigades, farms and other production subdivisions;

—to labor conscientiously in public farming and be responsible for the results of his work, observe labor and production discipline and the labor safety rules, master leading work methods and practices, and work to improve his skills;

—to preserve state and kolkhoz property, not to permit mismanagement or a negligent attitude toward the public good, make rational use of public land and private subsidiary land, and be solicitous of nature and conserve its resources.

6. Persons who leave the kolkhoz temporarily retain their membership in the kolkhoz in the following cases:

—during compulsory military service;

—when appointed to elective office in party, soviet, public or cooperative organizations;

—when undergoing training while away from production;

—when sent to work at other kolkhozes or in interfarm enterprises and organizations or in industry or other sectors of the national economy for periods as established by the kolkhoz board.

Kolkhoz farmers who retire because of age or disablement also retain their membership in the kolkhoz.

7. A member of the kolkhoz has the right to leave the kolkhoz when he makes written application so to do.

An application to leave the kolkhoz will be reviewed at a general meeting of the kolkhoz farmers within 3 months of the date of the application. During the 3-month period the kolkhoz farmer has the right to withdraw his application to give up kolkhoz membership.

On the second day following withdrawal from kolkhoz membership the board is obliged to give a former member his labor record and settle accounts with him.

Persons who leave the kolkhoz temporarily or permanently for good reason (being drafted into the army, appointment to an elective office, departure for training and so forth) have the right to additional pay and bonuses awarded according to the results of the economic year, proportional to time worked.

### III. Land and Land Use

8. Land occupied by a kolkhoz is cared for by the kolkhoz through use for an indefinite time and is state property—the common property of all the Soviet people—and may not be the object of any contract of sale or other transaction that violates the law of state ownership of land.

For each kolkhoz a state certificate will be issued by the executive committee of a rayon (or city) soviet of people's deputies, giving it the right to use the land; the certificate will indicate the dimensions of the land assigned to the kolkhoz and will give accurate boundaries for it.

Land assigned to a kolkhoz shall be divided into land for public use and for private subsidiary farming. Land for private subsidiary farming shall be delimited in kind from land for public use.

In addition to the land assigned for use for an indefinite time a kolkhoz may be assigned tracts of land for temporary use as distant pasture for livestock, fodder production and other needs.

9. The kolkhoz is obligated as follows:

—to make the most complete and correct use of the land assigned to it, carry out consistent work to improve its fertility and prevent soil erosion, carry out melioration measures in good time, and bring unused arable land into agricultural use;

—in line with zonal conditions and farm specialization to apply scientifically sound farming methods;

—to keep records of the land and natural arable land according to quantitative and qualitative indicators;

—to take care of the land and strictly preserve the land against waste;

—to insure the rational use of natural resources and conserve the environment and observe the requirements of nature conservation legislation.

The kolkhoz chairman and the specialists and leaders of the production subdivisions—sections, brigades, sectors—and also of contract collectives bear personal responsibility for the conservation and highly productive use of the land.

10. Reductions in the area of kolkhoz land or changes in the boundaries of the land used by the kolkhoz, resulting from state or public interests, shall be done with the consent of the appropriate state organs only with the agreement of a general meeting of the kolkhoz farmers. When this occurs, as a rule assignment of irrigated or drained land, pasture, farm sectors sown to perennial

plantations and grape vines, and hayfields and pastures on which radical land improvement work has been carried out is not permitted.

The kolkhoz has the following rights:

—the right to compensation for losses incurred by it as the result of the withdrawal, spoilage or destruction of arable land and other natural objects;

—the right to offer sectors of land for lease and other forms of secondary use by members of the kolkhoz and other citizens, and also kolkhozes, enterprises and organizations;

—the right to expose natural and economic objects on its own territory that are of exceptional ecological, historical or scientific value, and, in line with established procedure, to submit proposals to proclaim them natural or cultural monuments, with an appropriate set of conditions for conservation.

### IV. Kolkhoz Ownership

11. Together with state ownership, the economic basis of a kolkhoz is its cooperative ownership.

The right of kolkhoz ownership of its property is protected by law.

The property of a kolkhoz consists of the public buildings, equipment, housing, tractors, combine harvesters and other machines and equipment and means of transport, draft animals and commercial livestock, perennial plantations, land-improvement structures, output produced, money assets and other kolkhoz inventory.

The property of a kolkhoz also includes possessions of interfarm enterprises and organizations, agricultural combines and other associations in accordance with its participation in the creation of those possessions and the proportion of profits derived from their activity.

12. In order to engage in its activity and further increase public farming the kolkhoz creates, uses in a planned and productive manner, and adds to fixed and circulating capital. These kinds of capital are indivisible (the assets derived from them are not distributed among the members of a kolkhoz) and are used only for some specified purpose.

Fixed nonproduction capital is also indivisible.

The kolkhoz makes amortization deductions to the full replacement value of fixed capital and deductions for capital repairs.

The circulating capital of the kolkhoz is fully at its disposal and cannot be taken from it. Lack of circulating capital is made up through the gross income of the kolkhoz and by bank loans.



The size of circulating capital is established by a general meeting of the kolkhoz farmers when the production-and-financial plan for the kolkhoz is confirmed.

13. The kolkhoz' right to dispose of its property and money assets belongs only to the kolkhoz itself through its management organs. The kolkhoz does not permit funds to be allocated for purposes not connected with its activity.

The kolkhoz has the following rights:

—the right to acquire material resources through wholesale trade and according to the limits, on the basis of contracts concluded with enterprises and organizations in material-technical supply, and also to acquire technical assets, materials, raw materials and equipment from other enterprises and organizations;

—the right to acquire materials, spare parts, tools and small-scale equipment, means of small-scale mechanization and objects of material-technical equipment at retail trade enterprises and other organizations on a cash basis;

—the right make use of property owned by its members in its activity. When this is done the income paid to the kolkhoz farmers must correspond to the degree of their assistance through their property to the kolkhoz activity and is determined by a general meeting of the kolkhoz farmers;

—the right to sell, barter lease, pass on and give gratis on temporary loan for use by other enterprises and organizations, and also to citizens, buildings, equipment, technical facilities, implements, raw materials and other material values, and also to write them off due to wear and tear or if they become obsolete.

Members of the kolkhoz guilty of the destruction, deficiencies, spoilage or loss of kolkhoz property, and also of unauthorized use of tractors, vehicles, agricultural machines or draft animals or in any other way causing material harm are obligated to reimburse the kolkhoz.

The size of actual damage is determined by the kolkhoz board. Recovery for damage is for the amount of the actual damage, but not more than the average monthly wages of the kolkhoz member if the damage was caused by failure to fulfill or improper fulfillment of labor duties. In the case of deliberate damage, and also in cases as provided for by law, kolkhoz members are materially liable for the full amount or a greater amount. Reimbursement for damage is also made in the full amount when it is caused by a member of the kolkhoz when inebriated.

Reimbursement for damage not exceeding the average monthly wage of the kolkhoz farmer is made by retention of wages should the kolkhoz board so decides. When the kolkhoz member disagrees with the deduction or with the amount of the deduction, at his request the labor

dispute is examined using the procedure as laid down in paragraph 35 of this Charter. In other cases reimbursement for damage is made with the agreement of the kolkhoz member when the kolkhoz board so decides by means of deduction from wages, or, if such agreement cannot be reached, through legal means.

#### **V. The Production-Economic and Financial Activity of the Kolkhoz**

14. The main activity of the kolkhoz is to produce and market agricultural output.

The kolkhoz may create production facilities for the processing and storage of agricultural output, the extraction and fabrication of construction materials, and the production of consumer goods, develop other subsidiary production and business, and enter into long-term relations with industrial enterprises and trade, supply and other economic organizations to create industrial shops or sections at the kolkhoz in order to produce various articles and commodities on the basis of production cooperation, and also engage in other work and services.

The kolkhoz has the right to engage in any production-economic activity, including outside the rayon where it is located, that conforms to its tasks as established by charter and is not at variance with existing legislation.

15. The kolkhoz carries on its activity on the basis of five-year and annual plans for economic and social development, which are drawn up independently and confirmed at a general meeting of the kolkhoz farmers.

Input data for planning include economic contracts for the delivery of agricultural output to the state and through other channels, the sizes of deliveries of centrally distributed material resources, limits on contract work, and also long-term economic normativs.

When drawing up plans the kolkhoz proceeds from the need to insure expanded reproduction in public farming and develop personal private subsidiary farming by the kolkhoz farmers and other citizens living on its territory, and to meet its obligations to the state and achieve every possible growth in gross income as the main source for production development and satisfying more fully the material and cultural-and-everyday needs of the kolkhoz farmers.

The kolkhoz establishes cost-accounting for its production subdivision or enters into contractual relationships with them such as insure fulfillment of the planning indicators assumed for the kolkhoz as a whole.

16. The kolkhoz has the right independently to set prices for output sold through its own trade network and in the kolkhoz market, consumer cooperatives and other organizations, and in addition, that part of output that is marketed under the terms of contracts for state orders is sold at the purchase prices established.



17. The kolkhoz can on a voluntary basis take part in the activity of interfarm enterprises and organizations, agro-industrial combines, agricultural firms and other associations and make use of the products and services of these enterprises and associations.

18. If the general meeting so decides, a kolkhoz may combine part of its assets with those of enterprises and associations in the agro-industrial complex, the local soviets of people's deputies and other state and cooperative enterprises, and also public organizations, in order to build production and cultural-and-everyday projects on a shared basis, improve services and amenities and carry out other measures aimed at developing kolkhoz production and improving cultural-and-everyday services for the kolkhoz farmers.

19. The kolkhoz may enter into contracts with state, cooperative and public organizations to market agricultural output and subsidiary industrial products and crafts, and purchase equipment, materials, livestock and other items, and to produce industrial goods on the basis of interfarm cooperation, conduct scientific work and planning-and-survey, construction-and-assembly and other work, and provide and receive services; and also enter into contractual relationships with citizens and others that conform with the aims of its activity.

20. The kolkhoz may in accordance with established procedure participate in the activity of international cooperative organizations and establish and develop trade-and-economic, scientific and technical and cultural links and cooperation with agricultural cooperatives and other enterprises in the CEMA member countries, and also with enterprises and firms in capitalist and developing countries. The kolkhoz is fully responsible for the results of its own foreign economic links.

21. The kolkhoz may open accounts with the USSR Agroprombank offices to deal with its accounting and hold its money assets, and conduct all kinds of cash and accounts operations.

The transfer or disbursement of money assets from a kolkhoz account at a USSR Agroprombank office is done on instructions from the kolkhoz board.

The kolkhoz may make use of short-term and long-term loans.

Instructions from the kolkhoz board for the transfer or disbursement of assets from the kolkhoz accounts, and also the kolkhoz obligations with respect to loans are valid when signed by the kolkhoz chairman and the chief accountant.

22. The kolkhoz keeps bookkeeping, operational and statistical accounts, introduces advanced accounting methods and forms, and renders accountability reports according to established forms and submits them to the appropriate organs within the established time periods.

23. The kolkhoz is not liable for the obligations and debts of the kolkhoz members. Members of the kolkhoz are not liable in terms of their own property for the obligations and debts of the kolkhoz.

#### **Section VI. Organization, Wages, Labor Safety and Labor Discipline**

24. The work of a kolkhoz in public farming is done through the personal labor of the kolkhoz farmers.

In cases where appropriate specialists are not working at a kolkhoz or where agricultural and other work cannot be carried out in the necessary time periods by the kolkhoz farmers it is permitted to engage workers and employees for work under the terms of a labor contract.

The kolkhoz shows concern for the full and most rational utilization of manpower in social production.

25. The duration of and procedure for the work day at a kolkhoz, procedure for granting days off and annual paid leave, and also minimum labor participation in public farming by able-bodied kolkhoz farmers, are regulated by the kolkhoz rules for internal procedures.

26. Forms for the organization of production and labor in the sections, shops, farms, brigades, links and other production subdivisions are established and applied by the kolkhoz depending on the specific farming conditions.

The kolkhoz uses the collective contract as the main form for organizing labor and providing labor incentive, and also makes use of family, personal and other forms of contract.

The kolkhoz farmers select the makeup of the production subdivisions by proceeding from the interests of developing public farming, giving due consideration to the opinion of the labor collective and personal wishes, and also work skills and work experience. The kolkhoz board has the right in the case of production necessity to transfer a kolkhoz farmer to other work on a temporary basis not to exceed 6 months, and in this event wages paid will be for the actual work done but not less than the average wage for the previous kind of work.

The kolkhoz provides plots of land, tractors, machines and implements, draft animals and commercial livestock, buildings and other material resources for the collectives in the production subdivisions.

The activity of the production subdivisions at a kolkhoz is carried on on the basis of internal cost accounting.

Cost-accounting tasks for the production subdivisions and the terms of contracts are worked out with the participation of the labor collectives.

The kolkhoz board and the contract cost-accounting collectives strictly observe their contractual obligations and are materially liable for failure to meet them.

27. Public farming is the main source of income for the kolkhoz farmers. Wages at the kolkhoz are paid in accordance with the quantity and quality of work done by each kolkhoz farmer in public farming, and are determined according to final work results on the principle of higher wages for good work and better indicators.

Wage increases for the members of a kolkhoz are made on the basis of preferential labor productivity growth.

The kolkhoz independently determines the forms and conditions for wages. Using cost accounting and the collective contract, wages are determined according to gross income for output produced (or marketed) and volume of work completed, as are the periodicity of wage payments and other kinds of wages.

Poor fulfillment of work for which a kolkhoz farmer is to blame is not be paid for, or the wages paid for it are reduced.

The forms and conditions of wages for managers and specialists in the kolkhoz and kolkhoz production subdivisions are determined by a general meeting of the kolkhoz farmers.

Wage conditions (norms for production of output, processing norms, numbers of cattle cared for, bonuses and so forth) are worked out also according to improvements in organizational-and-technical conditions in production and reviewed with the broad participation of the kolkhoz farmers and specialists, giving due consideration to the specific farming conditions, and are confirmed by the kolkhoz board.

28. For work in social production the kolkhoz establishes wages for the kolkhoz members depending on final results from farming. Guaranteed wages for the kolkhoz members are insured by expanded reproduction, obtaining the planned level of net income, and conscientious fulfillment of labor duties.

In order to increase material interest on the part of the kolkhoz farmers in increasing agricultural output, improving quality and reducing prime costs, in addition to wages, additional payments, bonuses for making savings and other kinds of material incentive may be used, along with payments for the cross-utilization of labor, larger zones serviced or increased volumes of work completed, and so forth.

Part of the material incentive fund may be put at the disposal of the production subdivisions operating on the principles of internal cost accounting, using procedures determined by a general meeting of the kolkhoz farmers.

The collectives of the brigades, links, farms and other subdivisions that allow expenditures over and above the levels established may with the permission of the kolkhoz board fully or partially compensate for overexpenditures using assets set aside for wages and bonuses for them.

The kolkhoz independently establishes the complement of workers in the management apparatus, striving to reduce it and lower the assets needed to maintain it.

Kolkhoz members who for no good reason fail to give the minimum labor participation in public farming or permit production omissions and absenteeism, including absence from work for more than 3 hours without good reason, or who turn up for work in an inebriated condition, and also those who without good reason leave the kolkhoz before the end of the economic year, or who are expelled from the kolkhoz as the result of a decision by the kolkhoz board giving due consideration to proposals from the labor collective, may be partially or totally deprived of additional payments, payments for final results and other kinds of material incentive.

A kolkhoz farmer who is unjustifiably relieved of his duties is paid average wages for the time of enforced idleness, but not for longer than a 3-month period.

29. In order to satisfy the requirements of kolkhoz farmers for agricultural produce, a stock of produce is set up at the kolkhoz, made up of a certain part of the gross grain harvest and other products, and also fodder. These products and the fodder are distributed as wages in kind or sold to the kolkhoz farmers in amounts and using procedures as established by a general meeting of the kolkhoz members.

30. The kolkhoz board insures timely payment of wages owed. When this is done, money is paid at least once each month, while payments in kind are made as products become available.

Final settlement of accounts with kolkhoz farmers is made no later than 1 month after the annual accounts are made up at a kolkhoz.

31. Together with the trade union committee and guided by this Charter, the kolkhoz board draws up rules for internal procedures, provisions for the payment of wages, internal cost accounting, and collective and other forms of procedure, which are confirmed by a general meeting of the kolkhoz farmers.

32. All work at the kolkhoz is done with observance of the rules established for technical safety and the requirements of production sanitation.

The kolkhoz allocates funds required to implement measures to improve working conditions and work safety, technical safety and production sanitation, and to acquire special clothing and footwear and protective gear for distribution to the kolkhoz farmers in accordance with established norms.

The board appoints persons responsible for carrying out measures to create healthy and safe working conditions at the farm and to monitor their operation.

33. Women members of the kolkhoz have the right to maternity leave; pregnant women shall be assigned lighter work while still receiving the wages that they were receiving for their earlier work; appropriate conditions are created for nursing mothers to feed their infants, and they are granted additional time off; women with many children may work part time or a shorter working week, or may work at home.

The kolkhoz sets a short work day and provides other concessions for juveniles.

With the agreement of the trade union committee, in individual cases, persons who have attained the age of 15 years may be recruited for temporary or seasonal work.

34. Taking into account the opinion of the labor collective a general meeting of the kolkhoz members or the board may draw up procedures and determine incentive measures for the kolkhoz farmers for achieving high results in production, developing and submitting work efficiency proposals, saving public assets, and long-term exceptional work in kolkhoz production and other services to the kolkhoz.

35. Taking into account the opinion of the collective of the production subdivision, a general meeting may impose the following penalties on guilty parties for violation of labor discipline, the kolkhoz charter or the rules for internal procedures:

- a) a reproof;
  - b) a reprimand;
  - c) a severe reprimand;
  - d) transfer to lower-paid work for a period of up to 3 months or removal to lower duties for a similar period;
- for systematic violation of labor discipline, absenteeism for no good reason or arriving at work in an inebriated condition a kolkhoz member may be transferred to other, lower-paid duties regardless of skills, for the period laid down in the previous paragraph;
- e) dismissal from his duties (or work) with a mandatory offer of other work at the kolkhoz;
  - f) a warning of expulsion from the kolkhoz;
  - g) expulsion from the kolkhoz.

Expulsion of kolkhoz members is permitted only as an extreme measure against persons who systematically violate labor discipline and the kolkhoz charter following other penalties imposed against such persons.

Persons expelled from the kolkhoz are deprived of the rights of kolkhoz members as set forth in this Charter.

Penalties may be imposed on the kolkhoz chairman, the chairman of the auditing commission, members of the board and members of the auditing commission by a general meeting of the kolkhoz farmers, and on chief specialists, the chief accountant and the leaders of production subdivisions by the kolkhoz board.

Procedure for imposing and rescinding penalties is determined by the rules for internal procedures at the kolkhoz.

Labor disputes with kolkhoz farmers are examined by a labor dispute commission made up of representatives of the board and the trade union committee at the kolkhoz, except for disputes on issues as set forth in this Charter that fall exclusively within the competence of a general meeting of the kolkhoz farmers.

In the event of disagreement with the decision of the commission, and also in cases where agreement is not reached in the commission, a kolkhoz farmer has the right if he so chooses to apply to the general meeting of the kolkhoz members or a people's court for an examination of the labor dispute.

#### **Section VII. Distribution of Gross Output and Kolkhoz Incomes**

36. In the distribution of incomes a correct combination of accumulation and consumption is insured, together with constant growth in production, insurance and cultural-and-everyday public funds and improvements in the living standard of the kolkhoz farmers.

Material and other production costs (amortization of fixed capital, the cost of seeds, fodder, fertilizers and petroleum products, the cost of running repairs and so forth) are paid for from the gross output produced by the kolkhoz.

The kolkhoz forms a wages fund and makes payments to centralized all-union social insurance and social security funds using gross income received.

Net income after payment of taxes, repayment of loans and making other money payments to the state is used at the discretion of the general meeting of the kolkhoz farmers.



The sizes of deduction to increase fixed and circulating capital are established annually by the general meeting of the kolkhoz farmers taking into account the needs for funds to insure growth in social production.

37. The kolkhoz does the following with its output from crop cultivation and livestock farming:

- creates a seed stock to fully meet its requirements;
- complies with the terms of economic contracts to supply agricultural output, repays loans in kind, and creates a product stock for wages in kind or to sell to the kolkhoz farmers and other citizens;
- allocates fodder for publicly owned livestock and poultry as required, and also for livestock and poultry held at private subsidiary farms on a contractual basis;
- allocates products for public catering and to maintain children's establishments, and part of output and fodder to provide assistance for pensioners, invalids and the needs of the kolkhoz members;
- forms insurance and short-term stocks of seeds, fodder and foodstuffs.

The kolkhoz sells remaining output in the consumer cooperative network and in the kolkhoz market or uses it for other needs at its own discretion.

38. The kolkhoz uses money assets realized from the sale of output and from other sources primarily to cover material and other production costs, pay the kolkhoz farmers' wages, make payments to the state and pay back loans, form and add to kolkhoz social funds and make contributions to centralized funds.

### VIII. Kolkhoz Social Development

39. The kolkhoz implements comprehensive measures to improve working, everyday and leisure conditions, maintain and improve the health of the kolkhoz farmers and satisfy their interests and needs.

The kolkhoz carries on its social activity in close cooperation with the local soviets of people's deputies.

To this end the kolkhoz does the following:

- tries to reduce, and in the long term eliminate heavy unskilled labor on the basis of raising the level of comprehensive mechanization, introducing industrial technologies and improving the organization of work places;
- constructs and equips kolkhoz clubs, houses of culture, libraries and other cultural-and-enlightenment establishments, sanatoria and rooms set aside for relaxation, houses of rest, pioneer camps, kindergartens and creches and homes for the aged and for invalids and

insures that they function purposefully and efficiently; and creates sports facilities and promotes the development of physical culture and sport:

- helps the school in every possible way to enhance the effectiveness of teaching and the indoctrination of students and preparing them for an independent life and labor, provides schools with land, equipment, seeds, fertilizers, transport and other facilities for production training, and insures job placement in the kolkhoz for graduates from the schools;

- organizes public catering for the kolkhoz farmers and, if necessary, uses assets from the social development fund to subsidize meals;

- helps public health organs in carrying out therapeutic and prophylactic measures at the kolkhoz and provides the kolkhoz members with transport gratis and on a priority basis to take patients to medical treatment facilities;

- helps to strengthen the family; creates favorable conditions for women enabling them successfully to combine motherhood with labor and public activity; and effects the social restructuring of the countryside and constructs and improves a housing inventory, and also roads and communal and other projects. It helps the kolkhoz farmers with individual construction projects and repair work on houses, provides them with loans for this purpose, and helps to organize cooperative construction and provide personal and trade services for the kolkhoz members.

Housing in kolkhoz houses is earmarked for the settlement of kolkhoz farmers and other persons who are offered accommodations in farm houses in accordance with existing procedure. The provision of accommodation in kolkhoz houses is effected by the kolkhoz board jointly with the trade union committee, and these affairs are public knowledge.

When a kolkhoz farmer living in housing built by the kolkhoz partly using funds provided by the kolkhoz farmer saves the kolkhoz for no good reason he is obliged to yield up this housing to the kolkhoz, which reimburses him for his costs according to established procedure, or, if the general meeting of the kolkhoz farmers so decides, to reimburse the kolkhoz for its construction costs.

The kolkhoz is concerned to improve the production skills and cultural-technical level of the kolkhoz members; in line with existing procedure it sends kolkhoz farmers for training at higher and secondary specialized educational establishments, vocational and technical colleges and schools, and on skill-improvement courses; it offers kolkhoz farmers who have studied successfully

in correspondence and evening courses at specialized training establishments and worked conscientiously at the kolkhoz privileges as provided for in existing legislation.

Kolkhoz farmers who graduate from training establishments to which they have been sent by the kolkhoz are obligated to return to work at the kolkhoz in their specialty.

In the event that a kolkhoz farmer refuses for no good reason to return to work at the kolkhoz or stops working there before the end of the period established by law or contract, the student grant paid to him while undergoing training must be repaid to the kolkhoz if this was a condition of the agreement between the parties or an obligation.

40. In accordance with existing legislation the members of the kolkhoz receive old-age pensions, disablement pensions and pensions in the event of the loss of the breadwinner, while women also receive maternity grants. For badly-off families of kolkhoz members, grants for children are established and paid for.

41. In line with established procedure, kolkhoz members receive grants from centralized all-union funds for temporary work incapacity and trips to sanatoria or homes of rest, and they are also provided with other forms of social security.

If a general meeting so decides the kolkhoz may use its own funds to make additional payments on all kinds of pensions for kolkhoz farmers, and also establish personal pensions for veterans in kolkhoz development and for persons who have provided special services in developing public farming at the kolkhoz.

Members of the kolkhoz who are work incapacitated and do not receive pensions or grants are given material assistance by the kolkhoz using its own funds. Giving due consideration to the economic possibilities, the kolkhoz may establish additional payments on maternity grants and make a one-time payment to women with three or more children.

#### **IX. Private Subsidiary Farming by the Family of the Kolkhoz Farmer (the Kolkhoz Household)**

42. Private subsidiary farming by the family of the kolkhoz farmer (the kolkhoz household) is an integral part of socialist agricultural production.

The family of a kolkhoz member (kolkhoz household) may own a house, farm buildings, draft animals and commercial livestock, poultry, rabbits, bees, agricultural implements and means of small-scale mechanization for work on a subsidiary plot.

The family of a kolkhoz farmer (the kolkhoz household) is provided with the use of a private subsidiary plot for truck farming, orchard plantings and other needs.

The size of the private subsidiary plot for a kolkhoz farmer's family (kolkhoz household) is determined by the general meeting taking into account its labor participation in social production.

All crops not banned by law can be grown and use can be made of hothouses and other devices for heating the ground.

When it is not possible to provide kolkhoz farmers with private subsidiary plots around their houses (or apartments) they are provided with a full measure of land beyond the boundaries of the residential area of the populated point.

The kolkhoz has the right to allocate plots of land for use as collective orchards and truck gardens for those who live in multistorey apartment houses.

Private subsidiary plots of the dimensions determined are maintained for the families of kolkhoz farmers (the kolkhoz households) in the event that all members of the family (kolkhoz household) are incapacitated because of age or disablement, if the sole able-bodied member of the family (kolkhoz household) is drafted for military service or elected to an elective office, leaves to undergo training or is temporarily transferred to other work with the agreement of the kolkhoz, or if only juveniles remain in the family (kolkhoz household). In all other cases the question of maintaining a private subsidiary plot and its dimensions are resolved by the general meeting of the kolkhoz members.

The kolkhoz may also allocate additional plots of arable land, and also hayfields and pasture, to kolkhoz farmers and other citizens living on kolkhoz territory and enter into agreements with them for the production of livestock and other agricultural products.

The private subsidiary plot may not be used by other persons or worked using hired labor.

The kolkhoz board provides assistance for kolkhoz farmers in work on private subsidiary plots.

43. Norms for keeping cattle and poultry for personal use by the family of a kolkhoz farmer (kolkhoz household) are established by the general meeting of the kolkhoz farmers taking into account its participation in social production.

The kolkhoz board provides every possible kind of assistance for the kolkhoz farmers in acquiring livestock and poultry, together with zootechnical services, providing fodder and pasture for livestock and marketing produce.



44. If the rural or village soviets of people's deputies and the general meeting of the kolkhoz farmers so decide, private subsidiary plots may be offered to teachers, physicians and other citizens working in a rural locality.

#### **X. The Kolkhoz Management Organs and Auditing Commission**

45. Kolkhoz management is carried on on the basis of broad democracy and glasnost and the active participation of the kolkhoz farmers in deciding all questions of internal kolkhoz life.

The affairs of the kolkhoz are managed by the general meeting of the kolkhoz members (the fully empowered meeting) (referred to hereinafter as "the general meeting of the kolkhoz members") and by the kolkhoz board during the intervals between the general meetings.

46. The general meeting of the kolkhoz members is the highest management organ in the kolkhoz.

The general meeting does the following:

- adopts the kolkhoz Charter and makes changes and amendments to it;

- elects the kolkhoz chairman and the kolkhoz board and auditing commission and hears accountability reports on their activities;

- resolves questions concerning the admission of kolkhoz members and their departure or expulsion;

- adopts rules for the internal procedures of the kolkhoz and the provisions regarding wages, internal cost accounting and other internal kolkhoz enforceable enactments, and makes amendments or changes to them;

- examines and determines measures for the social transformation of the countryside;

- examines and confirms the agreement on social issues and work safety concluded between the trade union committee and the kolkhoz board;

- examines and confirms long-term and annual production-financial plans and the annual accountability reports;

- examines proposals from the kolkhoz board and makes decisions on the appointment and dismissal of chief specialists and the kolkhoz chief accountant;

- examines proposals and confirms the audit reports of the auditing commission;

- resolves questions concerning the creation of subsidiary industrial production facilities and craft facilities at the kolkhoz, kolkhoz participation in agro-industrial

associations, agricultural combines, agricultural firms and interfarm enterprises and organizations, and on deductions from kolkhoz funds to centralized funds;

- examines questions concerning changes in the dimensions of kolkhoz land and the boundaries of land use;

- resolves questions concerning consolidation, fragmentation, alteration or cessation of the activity of the kolkhoz in line with existing legislation;

- examines labor disputes between contract collectives and the kolkhoz board;

- examines complaints about the actions of the kolkhoz chairman, board and auditing commission.

Decisions on these matters fall exclusively within the competence of the general meeting of the kolkhoz farmers (the fully empowered meeting).

The general meeting of the kolkhoz farmers elects a people's control group and also examines and makes decisions on other matters concerning the activity of the kolkhoz.

47. The general meeting of the kolkhoz members is convened by the board as required, but no less than once every quarter. The kolkhoz board is also obliged to convene the general meeting of the kolkhoz farmers if so requested by a minimum of one-third of the members of the kolkhoz or by the auditing commission.

The general meeting is empowered to make decisions when a quorum of at least two-thirds of the kolkhoz members are present.

Decisions at general meetings of the kolkhoz members are made on a majority vote.

The kolkhoz board gives notification of the convening of a general meeting at least 7 days before the meeting.

48. In large kolkhozes where the convening of general meetings is difficult, in order to resolve matters properly dealt with by the general meeting, as an exception a meeting of authorized persons may be convened, as correspondingly written into the Charter, except for matters concerning consolidation, fragmentation, alteration or cessation of kolkhoz activities.

The authorized persons are elected for a term of 3 years at meetings of the kolkhoz farmers in the brigades and other kolkhoz subdivisions. Authorized persons include the kolkhoz chairman, the members of the board and the members of the auditing commission. Norms for representation by authorized persons are established by the kolkhoz board, giving due consideration to the maximum possible involvement of the kolkhoz farmers in the management of kolkhoz affairs.

Issues raised for discussion at a meeting of authorized persons are usually discussed beforehand at meetings of the kolkhoz farmers in the production subdivisions. The authorized persons inform their collectives of the decisions made by the meeting of authorized persons.

The meeting of authorized persons is empowered to resolve questions if at least three-fourths of them are present.

49. The kolkhoz board is the executive-management organ answerable to the general meeting of the kolkhoz members, and it exercises leadership over all organizational, production-financial, cultural-and-everyday and indoctrination activity at the kolkhoz.

The kolkhoz board organizes the fulfillment of plans for the production and sale of agricultural output, insures efficient use of the land, manpower and material and financial resources, and strengthens production and labor discipline.

The kolkhoz board enters into collective (brigade, family) and individual contracts and insures that they are observed.

The kolkhoz board concludes agreements with enterprises, establishments and organizations and with citizens and organizes compliance with them.

In its activity the kolkhoz board relies constantly on the broad kolkhoz aktiv, develops and supports creative initiative and enhances the responsibility of the kolkhoz members for the accelerated development of public farming, closely integrated with private subsidiary farming and increased labor productivity, and shows constant concern to improve working and everyday conditions for the kolkhoz farmers and displays a tactful and attentive attitude toward the requests and proposals that it examines.

The kolkhoz board is elected from among the kolkhoz members for a term of 3 years. The kolkhoz board annually presents an accountability report on its activity to the general meeting of the kolkhoz farmers.

Meetings of the kolkhoz board are convened whenever required, but at least once each month; the board is empowered to resolve questions if a quorum of at least three-fourths of its members are present at a meeting.

Decisions of the board are made by majority vote.

50. The general meeting of the kolkhoz members elects a kolkhoz chairman by ballot or a show of hands (at its discretion) from among the kolkhoz farmers, for a term of 3 years; the kolkhoz chairman is also simultaneously the chairman of the kolkhoz board. Several candidates may stand for election as kolkhoz chairman.

The kolkhoz chairman carries on the day-to-day leadership of kolkhoz activity, insures the timely convening of general meetings of the kolkhoz farmers and meetings of the board and implementation of their decisions, is answerable to the kolkhoz farmers for the results of work, and represents the kolkhoz in its relations with state organs and other establishments and organizations.

Within the limits of his competence and in accordance with the kolkhoz Charter and existing legislation, the instructions and directions of the kolkhoz chairman, in verbal or written form, are binding upon all kolkhoz farmers and workers recruited under the terms of labor contracts.

Relieving the kolkhoz chairman of his duties (including his relief in connection with transfer to other work) is done only on the decision of the general meeting of the kolkhoz farmers by a show of hands or by ballot.

The kolkhoz board elects kolkhoz deputy chairmen from among its own numbers.

51. The kolkhoz board submits proposals to the general meeting of the kolkhoz farmers on the appointment of chief specialists and the chief accountant of the kolkhoz from among the kolkhoz members and on their removal from their duties.

52. The chief specialists are responsible for the state of the sectors led by them and they organize fulfillment of the production-financial plan. Instructions from chief specialists on matters within their competence are binding upon the kolkhoz members and persons working at the kolkhoz under the terms of labor contracts.

53. The chief accountant organizes and is responsible for the status and trustworthiness of accounts and book-keeping in the kolkhoz, exercises day-to-day control over the safekeeping and correct consumption of money assets and material values, promotes the introduction of internal cost accounting, and takes steps to prevent mismanagement and waste. Together with the kolkhoz chairman, the chief accountant signs the annual accountability report for the kolkhoz, along with documents concerning the receipt and expenditure of money assets and material values.

54. Meetings of the kolkhoz farmers are convened in order to manage social production in the brigades and other kolkhoz subdivisions.

The meetings of kolkhoz farmers are convened by the brigades (or subdivisions) as required, but at least once each month for the brigade council, or at the request of at least one-third of the total numerical strength of the kolkhoz farmers in a subdivision or at the request of the kolkhoz board or kolkhoz chairman.

The meeting of kolkhoz farmers of brigades (or subdivisions) does the following:

—elects from among the kolkhoz farmers a brigade leader (or subdivision leader) by show of hands or ballot at the discretion of the meeting, for a term of 3 years, with subsequent confirmation by the kolkhoz board;

—examines proposals on cost-accounting tasks for the subdivisions, outlines steps to carry them out, and assumes socialist pledges;

—examines questions concerning the collective contract, intensive technologies, the safekeeping of kolkhoz property, improvements in work safety and equipment safety, and other matters dealing with the life and activity of the brigade (or subdivision);

—hears the accountability reports of the council and of the leader, specialists and other members of the brigade, submits to the kolkhoz board or the general meeting of the kolkhoz farmers proposals on incentive for members of the collective who work conscientiously, and determines liability in cases of violations of discipline.

The meeting of the brigade collective submits proposals on penalties to be imposed on the brigade leader (or subdivision leader) or his dismissal from his duties if he has failed to justify the trust of the collective.

The meeting is empowered to act when a quorum of at least two-thirds of the kolkhoz farmers in the subdivision are present. Decisions at the meeting are reached by majority vote.

The brigade (or subdivision) council is elected at the meeting for a term of 3 years. The council chairman is the leader of the corresponding subdivision. The rights and obligations of the council are determined by a provision on the brigade (or production subdivision) council confirmed by the kolkhoz board.

Meetings of the council are convened as required but at least once each month. Council decisions are reached by majority vote.

Instructions from the brigade leader (or subdivision leader) connected with production activity are binding upon all kolkhoz farmers working in that subdivision. In his work the brigade leader (or subdivision leader) is subordinate to the meeting of kolkhoz farmers and the kolkhoz board and kolkhoz chairman, and with respect to the corresponding matters, to the chief specialists.

55. An auditing commission is elected for a term of 3 years to monitor the economic and financial activity of the board and kolkhoz officials.

The auditing commission does the following:

—is guided by the kolkhoz Charter, the provision on the kolkhoz auditing commission and existing legislation, and is accountable to the general meeting of the kolkhoz

members; it monitors observance of the kolkhoz Charter, the rules for internal procedures, the provisions on wages, internal cost accounting, the safekeeping of kolkhoz property, the legality of contracts and economic operations, the expenditure of money assets and material values, and the correctness of accountability reports and accounts presented to the kolkhoz farmers, and also the timely examination by the kolkhoz board and kolkhoz officials of complaints and statements by kolkhoz farmers.

It conducts at least two audits annually of the production-economic and financial activity of the kolkhoz and it periodically checks the economic activity of brigades and other production subdivisions and presents its conclusions in the annual accountability report to the kolkhoz. Audit reports are confirmed by the general meeting of the kolkhoz farmers.

56. The auditing commission has the following rights:

—the right to check correctness in the use and safekeeping of agricultural output, seeds and fodder, material-technical and money assets, draft animals and commercial livestock, buildings, installations and other property;

—the right to demand essential documents from officials and members of the kolkhoz for checking;

—the right to submit proposals from the results of checks and audits for consideration by the general meeting and kolkhoz board.

Proposals from the auditing commission are considered at regular general meetings, while those submitted to the kolkhoz board are examined within 10 days.

57. Elections to the kolkhoz board and auditing commission are by show of hands or ballot, at the discretion of the general meeting of the kolkhoz farmers.

The number of members on the board and auditing commission is determined by the general meeting of the kolkhoz farmers.

The kolkhoz chairman and the members of the board and auditing commission may be recalled early if they fail to justify the trust of the kolkhoz farmers if the general meeting of the kolkhoz members so decides.

58. The kolkhoz creates the conditions necessary for successful activity by public organizations.

59. The kolkhoz board carries on its work in close contact with the trade union committee.

#### X. Adoption and Registration of the Kolkhoz Charter.

60. A kolkhoz Charter adopted by the general meeting of the kolkhoz members on the basis of the Model Charter is within 1 month presented for registration in the



executive committee of the rayon (or city) soviet of people's deputies. Subsequent changes and amendments to the kolkhoz Charter are made using the same procedure.

61. The registered Charter is kept in the kolkhoz board and in the executive committee of the rayon (or city) soviet of people's deputies.

62. In its activity the kolkhoz is guided by the kolkhoz Charter, the decisions of the kolkhoz councils and existing legislation, and it enjoys the rights of a legal entity and has a seal and a banner with its name.

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### **Problems in Industrialization of Agrarian Labor Discussed**

18240031a Moscow *EKONOMIKA SELSKOGO KHOZYAYSTVA* in Russian No 11, Nov 87 pp 34-40

[Article by S. Ilin, professor and Doctor of Economic Sciences at Moscow State University: "Problems in Industrialization of Agrarian Labor"]

[Text] The conversion of agricultural labor into a type of industrial labor in our country is not a single action, but rather a regular historic process that is associated with the development of productive forces and production relationships, the overcoming of substantial differences between mental and physical labor and cities and villages and the formation of a socially homogeneous society. And we have been solving this problem in a consistent manner since the initial years of Soviet rule. In recent years, a conversion has been carried out from the old technological method of agricultural production, based upon industrial equipment and heavy manual labor, to a modern method that is based upon highly developed machine techniques and progressive technologies and the social organization of labor and production. The problems of industrialization are especially vital at the present time as large-scale measures are being undertaken in connection with restructuring and accelerating the country's socio-economic development, activating the human factor, bringing about planned and comprehensive improvements in socialism and gradually converting over to communism.

The modern stage in the industrialization of agrarian labor is closely associated with the stage devoted to the planned formation and development of all branches of the APK [agro-industrial complex] on an industrial basis, under the conditions imposed by the scientific-technical revolution. Thus the process of converting agricultural labor into a type of industrial labor, with preparations having been made through earlier development of the productive forces and production relationships, is proceeding in an active manner and is being enriched by new meaning and functions. At the same

time, more complicated and large-scale problems are arising coincidental with the further industrialization of agrarian labor. Solutions must be found for these problems in order to ensure a new quality for economic growth and in the interest of carrying out the economic and social strategy of the CPSU, as outlined in the decisions handed down during the 27th Party Congress and subsequent plenums of the CPSU Central Committee.

The industrialization of agrarian labor is not an end in itself, but rather a means for raising its productivity and realizing a savings in labor expenditures per unit of product. Here we find the final expression of progress in equipment, the agrobiological science and in their technological applications. In raising the productivity of agrarian labor, a special role is played by the machine operators — the central figures in kolkhoz and sovkhoz production. Constituting a relatively small proportion of the overall number of agricultural workers (approximately 17 percent in 1985), they produce a considerable portion of the agricultural output, especially field crop husbandry products. However, there are still large reserves available in agriculture for raising labor productivity. It is sufficient to state that in 1985 and compared to 1980, with 27 percent growth in the power-worker ratio, its productivity increased by only 14 percent in the branch's public sector.

During the 12th Five-Year Plan, labor productivity in the public sector must be raised by 21-23 percent. The plans call for the entire increase in agricultural output of 14-16 percent to be obtained on the basis of raised labor productivity. And although a forward step will be taken along the path leading to the industrialization of agrarian labor and raising its productivity, the degree to which agriculture lags behind industry in terms of its industrialization level will still not be overcome. If labor productivity is to grow more rapidly in agriculture than in industry, then a great amount of work must be carried out in agriculture, where industrial means of production can be operated more effectively in combination with the land and other natural means of production.

In order to raise labor productivity, use must be made of a complicated system of interrelated factors that embraces literally all aspects and elements of reproduction. "The productive force of labor" wrote K. Marx, "is determined by diverse circumstances, including the average degree of skill possessed by a worker, the level of scientific development and the degree of its technological use, a public combination of the production process, the amounts and effectiveness of the means of production and natural conditions" (K. Marx and F. Engels, *Works*, Vol. 23, p 48).

The system of machines developed for agriculture must meet the following principal requirements: ensure the carrying out of all-round mechanization and the automation of technological processes during all production stages, continuity, continuous operations and the rapid



completion of technological processes, such that each of the mutually related machines, when carrying out its special function, simultaneously prepares a front of work for the machine which follows it; promote the creation of favorable sanitary-hygienic, psychophysiological and other working conditions for workers, ease their workloads and raise their productivity, raise the economic fertility of the soil, raise the productivity of the fields and farms and carry out operations during the best agro-technical periods based upon the introduction into operations of the achievements of the leading agro-biological and zootechnical science. This means that the industrialization of agrarian labor is not limited merely to mechanization, that is, to its initial stage. It requires an all-round approach to the use of the technical, natural and social conditions associated with agricultural production.

The industrialization of agrarian labor and improvements in its productivity are closely associated with land reclamation (drainage, irrigation, liming, gypsuming, agricultural amelioration and so forth). During the initial years of Soviet rule, V.I. Lenin advanced the question concerning the need for and tremendous importance of land reclamation, particularly irrigation, for the purpose of combating drought conditions, obtaining high and stable yields and raising the culture of farming. Since that time, a great amount of work has been carried out throughout the country. In 1986, the area of irrigated lands reached 20.2 million hectares, compared to 4 million hectares in 1913. In the process, the proportion of products obtained from irrigated and drained lands reached 32 percent of the overall gross output of field crop husbandry operations. The entire volume of raw cotton, 76 percent of the vegetables, 49 percent of the fruit and grapes, and 32 percent of the entire volume of corn grain were produced on irrigated and drained lands. An increase took place in the degree of technical equipping for land reclamation operations. The land reclamation specialists have at their disposal a large pool of tractors, excavators, bulldozers, scrapers and other needed machines. The irrigation systems, completed in conformity with the requirements of modern hydraulic engineering, are equipped with automatic equipment and telemechanics, equipment for the automatic distribution of water and highly productive watering equipment for ensuring the creation of an optimum biological regime for the soil. All of the irrigation systems must be of this type.

Growth in the productivity of agrarian labor is also dependent upon the use of chemical processes in agriculture and particularly upon its most important trend — the efficient use of mineral fertilizers in combination with organic fertilizers, in the interest of raising the cropping power of the agricultural crops. In 1986, agriculture was supplied with 26.5 million tons of mineral fertilizer (in a conversion for a 100 percent nutrient content), compared to only 0.73 tons in 1940. The effectiveness of applications of mineral fertilizer and also herbicides and other chemical and biological agents

for protecting plants is dependent upon the level of mechanization and automation for a complex of labor-intensive operations concerned with their preparation, transportation and application to the soil. Industry must provide the agricultural workers with a greater supply of bucket fertilizer loaders, bulldozer loaders, tractor trailers, devices for spreading lime, detachable fertilizer spreaders, herbicide-ammonia machines and other items of equipment. Improvements must be carried out in the work of the agrochemical service throughout the entire country, soil charts and agrochemical cartograms must be composed in all areas and the agrochemical and ecological training of land reclamation specialists and all agricultural workers must be improved.

Agricultural production is impossible in the absence of diverse types of plants, animals and other biological means of production, all of which are considered to be a component part of its logistical base. Improvements in the biological properties of agricultural plants and animals and increases in their productivity — these are important factors with regard to the industrialization and intensification of agricultural production and raising its efficiency. The extensive use of progressive biological methods and improvements in those strains of animals and plants which are suitable for industrial and intensive technologies are making it possible to strengthen man's control over the processes and final results of agricultural production and to raise its stability. This in turn is promoting an increase in the volumes and lowering the losses in output and improving its quality while reducing the expenditures in labor and resources. A real opportunity is at hand for controlling the complicated biological processes in agricultural production.

The increasing industrialization of agrarian labor is imposing new requirements upon sphere I of the APK, which produces modern means of production for agriculture and other branches of the complex. Industry is presently engaged in mastering and serially producing various types of equipment in conformity with a system of machines developed for the 1986-1990 period for the all-round mechanization of agricultural production. Its introduction into operations will make it possible to raise the productivity of agrarian labor by a factor of 1.5-1.8. By the end of 1986, the country's pool of tractors reached 2,854,000 units, the power-worker ratio for one worker was 32.7 horsepower and the availability of power on the farms per 100 hectares of sowing area — 358 horsepower.

During the current five-year plan, the deliveries to agriculture of tractors and various types of agricultural machines will increase considerably. However, quantitative growth is still not solving the problem of industrialization of agrarian labor. Under the conditions imposed by the program for intensifying agricultural production and raising its economic efficiency, decisive importance is being attached to improving the machines in accordance with the following principal trends: the production of highly productive wide-swath equipment allowing for

the maximum use of interchangeable assemblies, units and parts; raising the horsepower ratings and the speed and maneuverability of tractors and agricultural machines; ganging of equipment, which enables it to be used in a more complete and efficient manner; further general-purpose use, unification and standardization of equipment; achieving more complete operational reliability and durability for the machines and more thrifty use of them; improving the conditions for and easing the work of machine operators and ensuring equipment safety.

During the 12th Five-Year Plan, the agricultural machine operators are being supplied with new models of caterpillar plowing and wheeled general-purpose row tractors. The production of a set of various types of agricultural machines and implements for use with tractors is being increased considerably and this will make it possible to raise their productivity. The designers are creating highly productive combines for the harvesting of grain crops, potatoes and vegetable crops, machine complexes for the twin-phase harvesting of grain crops and the stationary threshing of grain and also cotton harvesting machines. The production of wide-swath self-propelled harvesters is being organized. The production of complexes of highly productive machines and equipment for the introduction into operations of soil-protective farming systems and industrial and intensive technologies for the cultivation of agricultural crops and also for the carrying out of land reclamation, forest-protective and other operations is being mastered. An increase is taking place in the production of machines of a high technical level for preparing and applying fertilizers to the soil and for applying chemical means for protecting plants. In addition, an expansion is taking place in the production of operationally reliable, thrifty and small scale tractors and motors, with a set of attachments for use with them, and other machines of improved designs for use in collective orchards and gardens and on private plots.

**Pool of Tractors, Grain Harvesting Combines and Trucks in USSR Agriculture (at end of year; thousands of units)**

	Tractors	Trucks	Combines
1940	531	228	182
1986	2854	1908	849

As a result of the implementation of all of these measures during the current five-year plan, increases were noted in such important indicators of the level of industrialization of agricultural labor as the technical and power-worker ratio for the branch's workers and also the proportion of expenditures of means of production of industrial origin, including their active portion (machines, equipment and so forth), in the overall expenditures of materialized labor for the production of agricultural products. However, the proportion of those who

perform work with the aid of machines and mechanisms and observe the operation of automatic equipment, compared to the overall number of those engaged in social production at kolkhozes and sovkhozes, is still small. In 1985, it amounted to roughly 25 percent (51 percent in industry). In animal husbandry, more mechanized production processes are found in poultry raising and swine breeding and fewer such processes — in dairy and beef cattle raising and in sheep breeding. In field crop husbandry, there is a higher level of mechanization for such operations as plowing, sowing and the tending of crops. Final operations (harvesting of crops, processing of products produced and so forth), especially in vegetable, potato, beet, fruit and cotton production, are mechanized to a lesser degree and this leads to great losses in agricultural products and raises the need for attracting workers from the city.

When determining the level of industrialization for agrarian labor, one must necessarily take into account such branch characteristics for agriculture as the seasonal nature of production, the tremendous "labor arena" that is associated with the fact that the chief means of production in this branch is land and a large proportion of energy-intensive mobile operations, large volumes and many types of principal and subsidiary products of production, the need for a maximum application of labor and resources during compressed periods for the carrying out of field work, an absolute reduction in the numbers of workers in connection with technical progress and others. It thus follows that in agriculture the technical and power-worker ratios must not be lower and possible even higher than in industry. This is borne out by the experience of collectives which employ industrial and intensive technologies.

The industrialization of agrarian labor is impossible in the absence of a radical transformation of its power engineering base and an improvement in the proportion of electric power in the overall power-worker ratio in agriculture. The consumption of electric power in this branch, especially in recent years, has increased rapidly, reaching 157 billion kilowatt hours in 1986 compared to 111 billion kilowatt hours in 1980 and 10 billion kilowatt hours in 1960. Many technological operations, especially in animal husbandry, can be mechanized and automated only on the basis of electrification. High quality and economical machines and items of equipment belonging to unified technological complexes are being produced for the purpose of ensuring the mechanization of operations in animal husbandry and feed production. The animal husbandry farms are being equipped with machines and implements for the all-round mechanization of cow milking operations, issuing of water, distribution of feed and the removal of manure from facilities. Designs are being developed and the production of equipment for feed conservation and for the processing of straw and also bioenergetic units for the processing of waste products at animal husbandry farms and complexes is being organized.

**Labor Productivity in USSR Agriculture (1913 = 1)**

1940	1.9
1960	3.5
1970	5.3
1980	6.3
1986	7.3

The supplying of agriculture with modern means of production is only the first step. In order to raise the productivity of agrarian labor noticeably, appropriate and progressive improvements must be achieved not only in the equipment but also in the technology and social organization of agricultural production and in stimulating the labor of workers. Here we are still encountering many problems which are in need of immediate solutions.

Although the work concerned with supplying agriculture with many types of equipment improved during the 1982-1985 period, the absolute increase in the volume of this equipment was negligible. The pool of corn harvesting combines, flax combines and flax-pulling tractors, mineral fertilizer distributors, spraying machines and units, tractor plows and a number of other machines decreased in size. This abnormal situation underscores the low quality and reliability of the equipment and its rapid deterioration. In addition to poor operation and careless storage of the agricultural equipment, this deterioration was also caused by shortcomings in the work carried out by the collectives of industrial enterprises which do not always observe the technological discipline and GOST's [state standards] and which thus produce products of a low technical level and quality. Importance is attached to strengthening control over the proper protection of agricultural equipment, to culling out and writing off such equipment in a correct manner on the farms and to improving the organization of machine and equipment repair work.

According to a statement by K. Marx, "the same means of labor, that is, the same basic capital can be used more effectively both as a means for lengthening the time of its annual use and as a means for increasing the intensity of its use" (K. Marx, F. Engels, Works, Vol. 24 p 399). Hence, more efficient operation of the machine-tractor pool requires more complete and intensive use of it throughout a 24 hour period and the entire agricultural year. The actual coefficient for the shift operation of tractors at kolkhozes and sovkhozes is still very low. If the machine operators on all of the farms converted over to double shift operations, this would be equivalent to

the additional use of a large number of tractors. But in order to implement such a measure, a very large number of tractor-machinists and drivers would have to be trained.

The equipment at kolkhozes and sovkhozes is still not being employed in a sufficiently intensive manner during the course of a shift. Many tractors systematically lie idle owing to technical defects or shortages in spare parts. In order to reduce the losses in working time and raise the labor productivity of the machine operators, the designers and engineers must develop more improved machines having automatic control over all elements of the working process. A need also exists for raising considerably the durability and reliability of the agricultural equipment, achieving the same degree of strength in the machine units and parts, carrying out the centralized lubrication of machine working organs and units and providing for their hydraulic control. All of this can produce great economic results and make it possible to increase the work volumes without increasing the size of the machine-tractor pool.

Under the conditions imposed by agricultural intensification on an industrial basis, an increase in the productivity of agrarian labor is associated with growth in capital investments and in the productive capital. During the 1980-1985 period, the productive capital in agriculture (including livestock) increased by 33 percent and gross agricultural output — by only 11 percent. This unfavorable dynamic, which testifies to a low output-capital ratio, was the result of inefficient use of equipment and a low productivity for agrarian labor, the rate of increase of which lagged behind the rates for growth in the productive capital of agriculture. Here we encounter a predominance of the capital-intensive form of agricultural intensification, in which the total labor expenditures for the production of a unit of product are still quite high. In order to lower the total labor expenditures, a conversion must be carried out over to a developed capital-conserving form of intensification. It is characterized by leading rates for raising the productivity of agrarian labor compared to the rates of growth for productive capital.

The operational results of leading machine operators underscore the availability of large reserves for intensifying agricultural production and activating the human factor. At the present time, each member of a leading collective which is mastering the intensive technologies and which operates on a contractual and true cost accounting basis is producing output valued at 80-130,000 rubles instead of 7,000 rubles worth, the average for the country. Compared to the country's average grain production per worker of roughly 10 tons, on the best farms —250- 300 tons. The persistent requirement for



efficient and intensive management of agricultural production and for activating the human factor has introduced into kolkhoz and sovkhoz operations such new and progressive forms for organizing industrial labor as small, mobile and self-governing contractual collectives, including family units which unite the interests of a large public farm with the personal interests of each worker.

More extensive use is being made of intensive technologies which make it possible to employ efficiently machine equipment and natural-biological and labor resources. Their use is raising the economic fertility of the land, ensuring high and stable yields and opening up new and practical opportunities for controlling the biological processes of agricultural production and for programming the final results of agrarian labor. In this manner, its conversion over to a type of industrial labor is being accelerated. By 1985, approximately 80 percent of all of the corn grain, two thirds of the soybean grain, more than 70 percent of the industrial sugar beets and more than 40 percent of all of the sunflower seed were obtained by the kolkhozes and sovkhozes from areas on which the agricultural crops had been cultivated using intensive technologies. Intensive technologies were employed on more than one fourth of the areas used for winter grain crop sowings.

The industrialization of agrarian labor is creating an opportunity for achieving a high level of productivity. But the effectiveness of the use of equipment, chemical agents, land reclamation and biological means is dependent upon the cultural-technical level of the workers and their skills. In terms of their educational and cultural level, the peasants are drawing closer to the workers. Today the extensive use of new equipment has resulted in the appearance in rural areas of new industrial labor professions: tractor and combine operators, drivers, mechanics, electricians, repair workers, operators and others. The numbers of machine operators at kolkhozes, sovkhozes and inter-farm enterprises throughout the country increased by a factor of almost 3.4 during the 1950-1985 period. But the rates of growth in the numbers of machine operators are still lagging behind the rates of growth for the machine-tractor and motor vehicle pool and this is creating great difficulties in organizing its efficient and effective use.

The industrial technical base for agriculture, including the complex of diverse machines, requires machine operators of a broad profile who are familiar with the principles of intensive technologies and who have mastered the modern methods of land reclamation and the use of biological and chemical processes in behalf of agricultural production. As a result of agricultural industrialization and intensification, the work of machine operators is becoming more complicated and skilled and is approaching the level of difficulty associated with engineering-technical and agronomic workers. This serves to place emphasis upon the increasing role being

played by mental labor as opposed to physical labor and it focuses attention on the change in the essence and character of agrarian labor and its conversion over to a type of industrial labor.

In order to ensure efficient operations at a large mechanized farm, highly skilled specialists are required: engineers, agronomists, agricultural chemists, zootechnicians, economists and others. In 1985 and compared to 1960, the number of specialists possessing higher or secondary specialized educations and working in agriculture increased by a factor of 5.3. But the problem is not so much one of the number of specialists and leaders, but rather the level of their skills and competence, their ability to utilize the achievements of scientific-technical progress in an efficient manner and the technical, biological, chemical and other factors associated with the intensification of agricultural production.

Industrialization exerts a progressive influence on literally all aspects of agricultural labor and production and it promotes increases in the level of specialization and concentration and in the integration of industrial and agricultural production. These progressive forms make it possible to organize large-scale highly mechanized agro-industrial production and to raise labor productivity. Workers attached to agro-industrial formations must organically combine agrarian and industrial labor in their production operations and hence in addition to mastering the technology for their respective branch of industry, they must also be able to employ progressive technologies in field crop husbandry and animal husbandry and possess a good knowledge of agronomy, zootechnics and other agricultural sciences. Under these conditions, it is obviously correct to discuss not simply the conversion of agrarian labor into a type of industrial labor but rather the development of a qualitatively new agro-industrial labor.

Under the conditions imposed by the industrialization of agrarian labor, activation of the human factor becomes of special importance. Modern agricultural and agro-industrial production, based as it is upon the development of machine equipment, requires workers who manifest initiative and creative search when solving complex problems associated with industrialization and intensification and raising production efficiency. In order to overcome the inertia of reflection and parasitical tendencies and for the purpose of activating the human factor, the radical restructuring of the economic mechanism of the APK [agro-industrial complex] and the conversion over to mainly economic administrative methods and to complete cost accounting, self-support and self-financing are being carried out. This is raising the interest and responsibility of the collectives and each worker with regard to improving the final operational results and it is promoting democratization and the formation of modern economic thought and the development in the machine operators and other APK workers of a sense of being in charge at their enterprises and over the land.



In connection with the planned formation and development of the APK, the problems concerned with the industrialization of agrarian labor and raising its productivity are not being examined adequately only from a branch standpoint and with respect only to agriculture. A more expansive approach is required here, one which takes into account the need for raising labor productivity in the production of the final product of the APK, in all branches associated with the social division of labor. We wish to note in this regard that during the 1975-1980 period, merely by an increase in labor productivity in the APK branches, an increase by a factor of 1.3 was realized in the complex's output volume. At the same time, notable progressive improvements took place in the structure of labor expenditures: the proportion of labor

expenditures in agriculture declined and in industry, transport and trade — it increased. The proportion of expenditures of live labor in the final APK product declined while that for materialized labor increased. All of this became possible as a result of the industrialization and intensification of labor in agriculture and other branches of the APK, increased social division of labor and improvements in the structure of the agro-industrial complex.

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## POLICY, ORGANIZATION

### Distribution of Price Subsidies to Consumers Suggested

18270031 Moscow PRAVDA in Russian 18 Jan 88 p 2

[Article by Yu. Yakunin, economist from Krasnodar: "If We Talk About Prices...Let's Consider it Together"]

[Text] Without exaggeration, the question of prices concerns every individual. However, from my observations, many have not yet realized the real necessity of their reform. More often the question still remains why reform is necessary. Little is said about the way to go about changing prices, when that is really what concerns people most of all. Everyone knows about the directive of the CPSU Central Committee June Plenum, that the change in retail prices shouldn't lead to a worsening of the population's standard of living. Yet the concern remains.

What apparently is the new approach? As a rule, up to now, we have formulated the most important documents in the following order: a commission is named, the prepared draft is discussed publicly, and is accepted with additions and modifications. Such an order generates conversation from time to time. But it's as though any discussion is pointless, for it is said that what has been drafted will remain that way.

I feel that this sort of thing should not be permitted in questions concerning price formation. Discussions should begin right now. Workers' proposals on the reform should be published. If opinions are, for one or another reason, found unacceptable, they should be met with argumentative objections from committee members and specialists. On the contrary, interesting opinions will underlie the reform draft. In this way, it will be a creative product from all the people. At the same time, individual proposals already in the stage of preparation will be able to undergo a practical test. I'd like to make a proposal.

For me, the need to remove state price subsidies is indisputable, as is the need to raise prices on subsidized goods. However, if this is done by lowering prices on other goods and services, social fairness will be violated, in so far as foodstuffs, services, housing and communal services and city passenger transport, for which there are subsidies, are extremely necessary for every individual. Everyone makes use of them daily, whereas there are some commodities that are not so essential. Subsidy distribution is now based on a particularly egalitarian principle. It is assumed that it reaches all equally. Really, though, subsidy affects those who are able to acquire goods. Truly, when there is a deficit, not everyone gets

them, but rather only those who have access to the deficit. Moreover, it is no secret that a significant part of the subsidy winds up in speculators' pockets.

It's clear that maintaining the living standard of the people is possible only if billions of rubles, which today are paid out as subsidy remain with the people. Consequently, in the case of rising prices it will be necessary to distribute this amount to the population. If prices aren't lowered on goods which are covered by a subsidy, the State won't lose anything.

An equal distribution of the entire amount of the subsidy would certainly be fair. Sixty-seven million children receive a "child" subsidy which is earmarked only for them in the amount of 3.5 billion rubles (therefore, this sum should be turned over only to them). A standard amount for an adult resident of the country comes to, according to my calculations, 285 rubles per year (24 each month), for a child, 337 rubles per year (28 each month). These amounts must be paid out to everyone.

There should be higher wage rates, salaries, pensions, stipends and allowances at the same time—24 rubles a month for workers, pensioners, students and other citizens receiving a salary and payments. Set up a monthly allowance of 28 rubles for all children up to 15 years of age. After age 15, the allowance will be kept for secondary school students until the end of their studies, but not for more than for 2 years.

There remains a small group of dependents, who also receive a subsidy and for whom it would be necessary to compensate for the loss. These are the housewives who are busy with child rearing. They should be granted a monthly allowance which would be an aggregate amount for adults.

Will each of us as well as the society as a whole profit from such a distribution? It is indisputable in the interests of economics. Many economists agree on this.

The total monthly income for 4 persons in my family comes to 325 rubles. As a result of the proposed distribution, my income will increase by 104 rubles or by more than a fourth. If one considers that a significant portion of our family's meat and animal oil are obtained at public catering enterprise and cooperative prices, which are higher than state retail prices, then, in all probability, the living standards of the family will not go down. Inhabitants of sparsely populated areas will turn out to be in an even better situation. They most often get meat at market and cooperative prices or go to the large cities to get it.

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## FUELS

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### Brigade-Level Economic Accountability in Gas Industry

18220046a Moscow GAZOVAYA

PROMYSHLENNOST in Russian No 11, 1987

pp 10-13

[Article by P. Z. Sosnoskiy and V. N. Goncharova of VNIIEgazprom [All-Union Scientific-Research Institute for Economics, Organization of Production, and Engineering-Economics Research in the Gas Industry]: "Brigade Economic Accountability in the Gas Industry"]

[Text] Brigade economic accountability is a primary form of production control, which is aimed at raising individual and collective responsibility for successful fulfillment and overfulfillment of plan tasks, at least expense in labor and funds, and it is also an effective factor in mobilizing production's internal reserves. The chief prerequisite for successful operation of economically-accountable brigades is the creation of a precise system of current-production planning that will provide for an inseparable link among the plan indicators of brigades, sections, and departments and the enterprise as a whole, and also for the brigade's status as an independent planning and reporting unit, which should be reflected in the paper flow throughout all the functions of organizing and controlling production.

As of 1 January 1987, 15,914 brigades were working at gas-industry enterprises, including 3,311 that were economically-accountable, the overwhelming majority of the latter being integrated brigades that were working on a single work order, with payment for the final result, and that distribute wages, extra earnings and bonuses with the application of KTU [the labor participation factor].

Brigade economic accountability has been most widely disseminated in drilling, derrick erection, subsurface repair and overhaul of wells, construction work, and gas recovery.

Let us cite some figures on the work of economically accountable brigades in 1986.

**Derrick Erection.** Here 99 brigades (87.6 percent) worked under economic accountability. In all, construction was completed at 1,002 drill sites, at 914 of them by economically accountable brigades. The prime construction cost per drill site for Mingazprom [Ministry of Gas Industry] as a whole was 62,300 rubles, while for economically accountable brigades it was 63,900 rubles. Production time for the erection of drill rigs was 91.9 percent for economically accountable brigades, 99.8 percent for unconverted brigades.

The amount of work done (in terms of cost) exceeded expenditures by 14.7 percent for economically accountable brigades, about 4.1 percent for unconverted brigades.

Average construction time for one drill site was 237 hours for economically accountable brigades, 416 hours for the unconverted ones.

Thus, in derrick erection:

the overwhelming majority of drill sites (91.2 percent) were constructed by economically accountable brigades;

the greatest profitability of production (14.7 percent) was achieved; and

the annual economic benefit from the activity of derrick-erecting brigades was obtained mainly (98.9 percent) by economically accountable brigades.

**Drilling.** Here 444 brigades (93.3 percent) worked under economic accountability. There were 1,110 well completions (89.9 percent) by the economic-accountability method. The prime cost for drilling one well was 739,900 rubles for economically accountable brigades, 903,700 for unconverted brigades.

Penetration during the year was 94.8 percent (2,413,720 meters). The prime cost for 1 meter of penetration was 340 rubles for economically accountable brigades, 639.5 for unconverted ones. Penetration per worker was 172.2 meters for economically accountable brigades, 83.2 meters for unconverted brigades. Drilling time for economically accountable brigades was 85.1 percent, for unconverted brigades it was 82.8 percent.

Thus, during drilling:

most wells were touched down by economically accountable brigades (89.9 percent);

production profitability was attained only by economically accountable brigades, whose work volume exceeded by 12.3 percent expenditures on their production; and

the annual economic benefit from drilling-brigade activity was obtained basically by economically accountable brigades (92.2 percent).

**Underground Repair and Overhaul of Wells.** Here 135 brigades (43.0 percent) worked under economic accountability. They did 11,148 of the well repairs (48.5 percent). In so doing, 6.7 well repairs were performed per worker in unconverted brigades, 8.9 in economically accountable brigades. Production time for repairing wells was 87.7 percent in economically accountable brigades, 82.8 percent in unconverted ones. The average duration of one well repair was 38.8 hours for economically accountable brigades, 47.3 hours for those economically accountable [as published].

Out of the total work volume (in terms of cost), 40.3 percent was the share for the economically accountable brigades, 59.7 percent for the unconverted brigades.

It must be noted that, despite the fact that labor productivity and the number of well repairs performed per worker are higher in economically accountable brigades than in the converted ones, the number of these brigades has in recent years remained at practically the same level. The annual economic benefit from the activity of the economically accountable brigades is 756,400 rubles.

Construction. Here 472 brigades (18.4 percent) were working under economic accountability, and 75 percent of these were integrated brigades.

The amount of work done by economically accountable brigades exceeded expenditures on their production by 34.9 percent, while for unconverted brigades expenditures were more than the work done, by 7,361,890 rubles, that is, their activity was unprofitable.

Estimated output per worker per year was 33,980 rubles for economically accountable brigades, 22,850 rubles for unconverted brigades.

Despite the fact that economically accountable brigades consisted of only 18.4 percent of the total number of construction brigades, they did 25 percent of all construction and installing work (SMR's).

It should be noted that, despite the adequately high economic indicators for the activity of economically accountable brigades, construction as a whole was marked by a low level of work organization, especially in the unconverted brigades, whose work often is unprofitable. The duration of SMR is not being accounted for locally, and the economic effectiveness of the activity of brigades that are working under the various forms of work organization is not brought to light. Construction jobs are very much dispersed, schedules for performing SMR are made up by job without a consideration of their location, much time is spent redeploying workers from job to job, and the brigades are not being provided with reinforced-concrete constructional structure, materials, and automotive transport on time and in adequate amounts.

Output per worker in economically accountable brigades is 11,130 rubles more than in unconverted brigades.

The annual economic benefit obtained from the activity of construction brigades is 2,763,740 rubles, the greater part of it being obtained from the activity of economically accountable brigades.

Oil and Gas Recovery. Here 190 brigades (36.8 percent) were working under economic accountability.

The economically accountable brigades recovered 482.7 billion cubic meters of gas (76.8 percent of total recovery). In so doing, expenditures per 1 million cubic meters of gas recovered was 3.7 rubles for economically accountable brigades, 5 rubles for unconverted brigades. The amount of work done by economically accountable brigades exceeded 2.4-fold expenditures on their production work, and output per worker was 945,200 rubles (2.3-fold that of unconverted brigades).

**The time has now come when a further increase in production should be provided by reducing materials intensiveness per unit of output, this being the main and chief direction of development, which should predominate not only in the modern era but also in the long-term.**

The development of brigade economic accountability is a progressive and promising direction. However, only 15.1 percent of the blue-collar workers in the branch are yet working in economically accountable brigades. This testifies that many enterprises have not been paying proper attention to developing brigade economic accountability, citing, in so doing, objective difficulties, the complexity of determining the resources consumed by the brigade, the shortage of measuring instruments, the undeveloped state of the standards, a lack of consideration, and so on.

Of course, there are difficulties in this work. However, the state approach and the necessity for making economical use of resources require the accelerated introduction of brigade economic accountability. **If it is possible to consider at least one type of material resource on the consumption of which the brigade can exert an influence, then elements of economic accountability should be introduced.**

It is necessary to study the question and to take measures to improve considerably the system for reporting the consumption of various types of materials and fuel-and-power resources in the enterprise's subunits, primarily in the brigades.

**This work is not simple, but without organizing a system of accounting and reporting, it is impossible to introduce brigade economic accountability and economic accountability at all.**

With the development of consolidated, integrated brigades and the complexity of the technical, economic, organizational and social tasks they are solving, the time the brigade spends on administration increases. Because of this, the fulfillment by one person of several different functions, for example, of foreman and brigade leader, becomes necessary.

**In some cases engineers and technicians must be included in large brigades in order to improve engineering support. This intensifies both the specialists' material motivation**



to achieve high final results at minimum cost and their responsibility to the collective. The quality and responsiveness of the decisions they make will be raised.

**The use of KTU in distributing brigadewide earnings exerts an importance influence on the ratio of workers to the amount of work.** Where KTU is used correctly, reductions in worktime losses and rises in the work's intensiveness are appreciable, and discipline is strengthened, which, in the final analysis, will lead to growth in labor productivity.

An analysis of the introduction of brigade economic accountability in various subbranches of the gas industry disclosed consistency in the development of this method for organizing work in the modern era, since **this progressive form possesses the greatest simplicity and clarity of the connection between the results of the work and the rewards for it.**

A study that has been made of the work of economically accountable brigades in various types of activity allows the conclusion to be drawn that the economic, morale and psychological advantages of this method create favorable circumstances for its wide dissemination, especially in those productivity activities where there is a potential for relative organizational separation of working collectives and of the amounts and types of work being done.

**The wide development of brigade economic accountability will promote realization of the tasks called for by 27th CPSU Congress decisions and successful fulfillment of the plans and socialist commitments adopted by the collectives of associations, enterprises and organizations of the USSR Ministry of Gas Industry for 1987 and for the 12th Five-Year Plan as a whole.**

The anniversary dynamics of increase in natural gas's share in the country's fuel balance grew from 4.0 percent in 1957, to 17 percent a decade later, to 23 percent in 1977 and to 34 percent this year.

#### Photo Caption

1. p 11. One of the most important facilities of the Permtransgaz [Perm Gas Transport Association] gas-pipeline system is the Gornozavodsk Compressor Station. Constructed out of supermodules completely prepared at the factory, it is equipped with gas-pumping units of high power per unit—16 and 25 MW. Thanks to the high degree of automation of the units, servicing personnel in the compressor department have been reduced to a minimum: 1-2 machine operators work per shift. The new units are undergoing a check under complicated operating conditions, a fact that suggests that the producing plant must be considered when perfecting a GPA.

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#### Updating of Gas-Transport System Urged

18220046b Moscow GAZOVAYA

PROMYSHLENNOST in Russian No 11, 1987  
pp 26-29

[Article by V. T. Fadeyev, member of the journal's editorial board: "Effectiveness of the Gas Transporting System: "A Modern Tactic for Technical Renewal"]

[Text] In order to provide for high effectiveness of the gas-transporting system, the principles of intensification, the newest equipment and technology, and new approaches and new methods aimed at attaining high final results with maximum possible reductions in production costs should be made the basis for its operation.

The continuity of operation of the gas-supply system and the reliability of its individual facilities depend directly upon the quality and technical level of the equipment and the means for automation being used and upon comprehensive mechanization of the production processes.

Analysis indicates that at the high rates of development of the gas supply, the solution of these problems lags behind the demands for highly effective operation of the industry. An example of this is the technical status and reliability of operation of the basic element of the gas-transporting system—the en-route gas-pumping units (GPA's), which provide for more than two-thirds of the productivity of any gas pipeline. As a survey of compressor stations (KS's) that was conducted in 1986 showed, the share of GPA's and equipment requiring replacement was 11 percent, the share of equipment subject to modernization was 59 percent, and equipment that met modern requirements was 30 percent.

In recent years development of the productive potential of gas transport has been provided for basically by putting new units of high unit capacity into operation. With a 1.6-fold increase in the GPA inventory during the 11th Five-Year Plan, total GPA capacity has more than doubled. At the same time the new large GPA's have not proved to be reliable and effective enough, a factor that has become one of the reasons for the appreciable reduction in indicators and in utilization of the whole inventory of the units installed at KS's. During the indicated time period, operations under load were reduced from 64.1 to 54.3 percent for gas-turbine units and from 52.1 to 37.4 percent for those with electric drive. Simultaneously, the time share that these units spent in repair and compulsory shutdown increased. For gas-turbine GPA's, it was 13.7 percent in 1985 versus 10.2 percent in 1980, and for electric-drive units the figures were 7.2 and 6.7 percent, respectively.

Equipment aging influenced considerably the magnitude of these indicators. At present, units whose time in service exceeds 15 years make up about 4.5 million kW of the KS's power. These include GT-700-4, GTK-5, GT-700-5, GT-750-6, GTN-9-750, GT-6-750, AZ-4500 and STM-4000 units which have become obsolete and worn with time and are not being produced by industry. These units, as a rule, have exhausted their service lives and their engineering-economics indicators are low. Thus, the power of the GT-700-5 and GT-750-6 does not exceed 75 percent of the original power, and their efficiency is 6-8 percent lower than that of new gas-turbine units. The operation of such GPA's involves high expenditures for repair and nonproductive consumption of energy resources. They are not suitable for modernization, given the KS's operating conditions, and must be replaced by more modern units.

By the end of the current five-year period another 5 million kW of power installed at KS's will have served 15 years and, during the 13th Five-Year Plan, they will have exhausted their service life. Thus, obsolete and worn GPA's with a total power of about 10 million kW will have to be replaced fully in the next 10 years. The power of units in need of modernization because their indicators do not meet modern requirements come to almost 15 million kW. And this means that each year more than 2 million kW of KS power should be replaced or modernized. At the same time, since 1979, when systematic work on updating the GPA pool began, about 1.65 million kW have been replaced, 0.27 million kW of it in 1986.

It should be noted that most gas-pumping units of more recent production, whose time in service does not exceed 10 years, also do not meet modern demands for reliability and modern engineering-economics operating indicators. Many of these GPA's, especially those with gas-turbine drive of 10, 16 and 25 MW of power, should be modernized with a view to improving their performance.

**Considering that 70 percent of the GPA's and other industrial equipment now require updating, it is necessary:**

to increase greatly the amounts of replacement and modernization of units, bringing the amounts thereof up to 2-3 million kW per annum versus the average of 0.5 million kW annually that is planned for the current five-year plan;

to rebuild KS's on the basis of the replacement of obsolete and worn units with units of greater capacity and modernity, and also through modernization of the units installed, in order to improve their engineering-economics indicators;

to replace, if possible, on a first-priority basis, all units (about 900 of them) of the GT-700-5, GT-750-6, GT-6-750, AZ-4500, STM-4000, GT-700-4 and GTK-5 types;

to develop standard design solutions for rebuilding KS's with different types of units; and

to increase 2-fold to 2.5-fold the capacity of in-house contracting and overhaul organizations employed in updating fixed productive capital in gas transport.

The gas-transport system later on will be developed under complicated conditions. On the one hand, development will depend upon the utilization effectiveness of the productive potential created for it and by the necessity for rebuilding it. On the other, negative factors associated with the development of new gas fields that are located in areas of difficult natural and climatic conditions will be manifested increasingly distinctly.

In this situation, the complicated tasks of assimilating large amounts of capital investment and of increasing the efficiency of the existing productive potential must be solved. Realization of these tasks requires the creation of new equipment and new technology both for facilities that are under reconstruction and for the updating of obsolete and worn fixed capital. In so doing, the share of capital investment for reconstruction and reequipping will be increased annually.

When updating production facilities, a set of organizational, engineering and social measures should be executed throughout all areas of activity of the subbranches. In particular, it is necessary:

**to introduce new generations of GPA's with gas-turbine drive and completely outfitted modular automated KS's;**

to increase the share of electric-drive units by creating and introducing new machinery with 16-25 MW of power and with regulation of productivity;

to create and introduce modern means for technical diagnostics and for the repair of KS's and the linear portion of gas pipelines;

to provide for the comprehensive automation of gas-transport enterprises and the conversion of compressor stations to remote control;

to implement measures for increasing the gas-supply system's reliability, including the creation of operational gas reserves in storage and optimal development of the gas pipeline's structure;

to introduce widely measures for saving fuel and power resources; and

to develop and implement a progressive system for equipment overhaul and servicing, which calls for centralization of the overhaul of all types of equipment and automation resources and the participation of manufacturing plants in maintenance of the articles they have delivered.

It should be specially emphasized that work on updating production facilities can be realized only where the machinebuilding ministries will develop and master the production of new generations of GPA's and equipment. However, analysis has indicated that work in this area is advancing slowly. USSR Minenergomash [Ministry of Heavy, Power and Transport Machine Building] has been delaying the creation of centrifugal compressors for booster KS's, electric drives of gas-pumping installations, and recuperators for units with 10 MW of power. A detailed study of the problem of creating and delivering automated modular KS's that are completely outfitted and with various types of drive is required. Not enough attention is paid to developing outfitted steam-and-gas installations for utilization of secondary energy resources. Meanwhile, most of the equipment now being produced does not meet modern requirements.

The legitimacy of posing the question this way is confirmed by the following analysis. About 70 percent of the whole GPA pool is made up of obsolescent units with unit capacities of 4-10 MW. Despite the fact that this pool was augmented during the 11th and 12th Five-Year Plans by newer units of 10, 16 and 35 MW power, including those with aviation and marine drives, its reliability and economy of operation have remained low.

Neither did unitized systems for automated control that were delivered to gas-transport facilities by USSR Minpribor [Ministry of Instrument Making, Automation and Control Systems] meet modern demands, because of an obsolete components base, inadequate reliability and structural redundancy. In combination with low reliability of the basic and auxiliary equipment of KS's, this does not allow their conversion to shiftfree operation.

USSR Minenergomash has been shipping GPA's of 25 MW power to KS's since 1983. In 1986 these new units had a service time before failure of 526 hours versus the 3,000 hours of the specifications. Since units of this type began operating, a large number of various factory-related defects have been found.

In order to raise said GPA's operating reliability, USSR Minenergomash, USSR Minpribor and USSR Mingazprom have introduced more than 200 organizational and technical measures, but these have not led to a considerable improvement of their operating indicators.

Units of 16-MW power produced by USSR Minenergomash plants also have unsatisfactory engineering-economics characteristics. The average service time before failure of these machines does not exceed 620 hours. They have extremely low reliability because of the large number of defects of a constructional and production nature. In 1986 these units were in emergency repair about 45 percent of the calendar time, and almost half of them were not operating.

The unsatisfactory operation of GPA's of 16 and 25 MW power produced by USSR Minenergomash testifies to the undesirability of using them further at KS's that are being built, and decisive measures must be taken to accelerate the development and serial output of new, highly reliable units with specifications which correspond to those of the world's best models.

In recent years gas compressor units with drive off aviation engines of 6.3 and 16 MW power have been used widely on trunk gas pipelines, especially on the largest ones, which support the delivery of gas from Tyumen oblast's northern regions to European countries and to export. They comprise 20 percent of the whole GPA pool, and by the end of the current five-year plan their number will be increased 1.7-fold in gas-transport systems.

A high degree of factory preparation and the modular configuration of units with aviation drive will enable the time taken to build and put KS's into operation to be reduced substantially.

At the same time, a number of major deficiencies which affect considerably operation of the gas-supply system have been found during operation of these units. The main defects are low efficiency and short service life of aviation-engine operation. Thus the efficiency of NK-12ST and NK-16ST engines does not exceed 24-27.5 percent versus 34-36 percent for the best foreign counterparts. Operating service life is 30,000 to 33,000 hours. And after 10,000 to 11,000 hours, they must be overhauled at the factory. At the same time, stationary gas turbines used for such purposes permit operation up to 100,000 hours.

Despite the limited service life, aviation engines often go out of commission because of breakage of components and parts. During eight months of 1987 such breaks occurred on 197 engines. This situation is complicated by the fact that USSR Minaviaprom [Ministry of Aviation Industry] systematically fails to cope with goals for repairing obsolete engines and for producing new aviation ones. In 1986 the plan for delivering NK-12ST engines was met 75 percent, and in the first three quarters of this year the figure was 50 percent.

In September 1987 more than 130 GPA's were idle because they were without aviation engines for the indicated reasons, and by the end of the year, according to USSR Mingazprom assessments, the number of units idled will increase to 170-180. This leads to the full stoppage of some KS's and cessation of the delivery of gas to the country's European part. In order to avert complications in operation of the gas-transport system, the shipment of no less than 400 NK-12ST and 200 NK-16ST engines must be provided for annually during the current five-year plan.



Thus, an extremely tense situation has taken shape in the country's fuel supply. Because of this, it is urgently necessary that problems of creating new and highly effective GPA's of 10, 16 and 25 MW capacity with gas-turbine, aviation and electric drives be solved and that concrete measures be taken to provide them to the gas industry during the 13th Five-Year Plan. One of the areas for practical solution of this problem is the cooperation of the machinebuilding branches, and also production integration with socialist countries in the creation of a new generation of gas-pumping equipment.

Moreover, analysis indicates that updating production on the basis of the new equipment and technology contemplated for introduction will not allow the influence of the negative factors linked with complication of the conditions for recovering and transporting gas to be fully surmounted and improvement of economic indicators of the subbranch's work to be provided for. One of the causes of this situation is the fact that the level of scientific and technical progress whose mastery is planned is based on achievements that already exist in world practice. This is explained by the inadequately high demands made on the equipment-manufacturing ministries, which confine themselves to improving traditional machinery and industrial processes.

In order to surmount these deficiencies and to convert the gas-transport system to intensive paths of development more consistently, plans for updating equipment and technology during 1990-2000 must be reexamined. They should be based on new and higher requirements for the creation of GPA's, equipment and technological processes whose introduction will enable the unfavorable influence of natural, technical and other conditions to be changed and fulfillment of 27th CPSU Congress Tasks to be provided for, not only for total production volume but also for the main engineering-economics indicators.

Based upon an analysis that has been made of certain problems of scientific and technical progress in transporting gas, it can be concluded that this progress is being made basically along the path of improving traditional equipment and technology. This also promotes a lag behind the achievements of world practice in the solution of some problems that are associated with reliability, automation, and level of engineering-economics indicators in the operation of various types of equipment and also of the gas-pipeline system as a whole.

A second important conclusion is the fact that a comprehensive approach to solution of the problems that are arising is being poorly considered in the development of scientific and technical progress. The lag of qualitative indicators of the work behind the pace of development, the poor effectiveness of various industrial processes in the face of indicators for their use that are high, the

delayed solution of tasks for updating production, and the slow pace of introducing the latest achievements of science and technology into production work testify to this.

The expenditures mechanism of management, under which production outlays are poorly commensurate with their results, and not only slowed qualitative changes in gas transport but also created serious difficulties in the path of overcoming the situation that has been created. In this connection, it is necessary that greater efforts be aimed both at the improvement of traditional equipment and technology and the integrated solution of all problems of the effective functioning of the gas-supply system, and at searching for, discovering and using fundamentally new achievements of scientific and technical progress, which will enable broad opportunities to be opened up for improving operating indicators.

The anniversary dynamics in gas-pipeline length show a growth from 73,000 km in 1957 to 53,000 in 1967, to 111,000 in 1977 and to 179,000 in 1987.

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## ELECTRIC POWER GENERATION

### Boguchanskaya GES Construction Progress Reported

18220027a Tallinn SOVETSKAYA ESTONIYA in Russian 1 Dec 87 p 1

[Unattributed report: "The Fourth GES of the Cascade"]

[Text] A remarkable event of the departing year was the crossing of the Angara at the Kodinskiy dam site. Soon the Boguchanskaya GES—-the fourth in the Angara cascade—will rise up here. With its startup, the whole Angara power system, which also includes the Irkutskaya, Bratskaya and Ust-Ilimskaya stations, will be generating 66 billion kWh of electricity per year. Not one river in our country has such power output. And 10 kilometers from the construction site the city of Kodinsk is rising up at the small old taiga settlement of Kodinskaya.

The Middle Angara regional production complex will be developed when the Boguchanskaya GES is constructed. For these lands are storing reserves of iron ore, nonferrous metals, petroleum....

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### Cement Shortage Reported at Gusinozerskaya GRES Site

18220027b Moscow SOVETSKAYA ROSSIYA in Russian 15 Nov 87 p 2

[Unattributed report: "Telegram to the Paper"]

[Text] "Startup of the fifth power unit of the Gusinozerskaya GRES, which was planned for the fourth quarter of 1987, is threatened with interruption in view of the fact that the Novokuznetsk Cement Plant is not shipping the cement allocated for the construction. Repeated appeals to the plant's director, Comrade Karnaukhov, have not been successful. I ask *Sovetskaya Rossiya* to render practical assistance in dispatch of the cement so that the CPSU Central Committee decree, "Progress in Preparation of the National Economy for Work During the Winter," which was published in the newspaper *Sovetskaya Rossiya*, 20 September 1987, and which calls, in particular, for startup of the fifth power unit of the Gusinozerskaya GRES, may be carried out. GRESstroy [GRES Construction Trust]. Tsyplov."

From the editorial board: Let us recall that said CPSU Central Committee decree noted the unsatisfactory state of construction of a number of power-engineering facilities that are due for startup, including the Gusinozerskaya GRES. Pointed out was the cause of the existing situation: underrating of the importance of this work on the part of supervisors of the ministries that are doing the construction. The CPSU Central Committee required that they quickly take steps to man fully the power-engineering construction jobs and the facilities to be introduced with skilled blue-collar workers, engineers and technicians and to outfit them completely with constructional structure and building materials.

It would seem that everything is clear. Nevertheless, the anxious telegram from Gusinozersk indicates that still not everyone is aware of the importance and the unconditional requirement of the decision adopted. What else can explain that introduction into operation of one of the most important units of power capacity is threatened with interruption because of a cement shortage? The editorial board hopes that the USSR Council of Ministers Buro on the Fuel and Power Complex and USSR Gosstroy, which are charged with establishing strict monitoring over progress in fulfillment of the decree, will take the necessary steps.

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### Storm Damages Transcaucasus 500-kV Power Line

18220027c Moscow SOVETSKAYA ROSSIYA in Russian 22 Nov 87 p 6

[Article by N. Dombkovskiy: "Accident in the Mountains"; Russia's Power Engineers Will Help their Colleagues from Georgia"]

[Text] It seems that this year the elements have broken all possible records. There have been storms and floods, avalanches and snowfalls, storms and cyclones. And here

is a new blow: on the eve of the November holidays storm winds wrecked a power line in the mountains of the Caucasus. Five enormous supports for an LEP-500 [500 kV power line] collapsed under the force of the air currents.

"The damage caused the Transcaucasus economy is extremely great," says O. Tsintsadze, supervisor of the enterprise that operates the Georgian SSR's high-voltage grid. "A lot of power is transmitted over an LEP of such voltage. Workers of Kavkazelektrosetstroy [Administration for Construction of Electric-Power Grids of the Caucasus], despite the prevailing weather conditions, managed in 10 days to restore three supports and arrange for an electrical supply under a temporary scheme. However, right now we cannot fully restore the LEP to operation, to the so-called "regular" situation. First, the line is in a very difficult place, above the Tkibulskaya GES reservoir and along the slopes of the Imeretiya mountains. The distance between supports is 300-350 meters. Moreover, we do not have the right to switch off the electricity for even an hour."

A. Vasilchikov, one of the supervisors of the Long-Distance Transmissions Production Association, says:

"Our association's laboratory has developed and is successfully using methods for repairing LEP's without removing the voltage from them. In particular, they can be used also during operation on the world's largest LEP's, with a voltage of 1.5 million volts."

What is to be done in Georgia? It will be necessary to substitute temporary insulators for the permanent ones and to perform major mechanical operations on the wire themselves, at the places where they are attached to the supports.

Special cradles similar to cable cars are used for this purpose. They are raised upward along the support on an insulated device, and then the cradle's wheel is suspended on the current-carrying wire. A worker, in carrying out the repair, can move along the wire from support to support by means of "muscle traction." The work is not very simple.

In Georgia, a brigade of specialists from various cities of the RSFSR, under the supervision of our laboratory's chief, N. Korobkov, will fly in Wednesday, 25 November. But most likely they will have to go to the mountains, in Tkibulskiy Rayon, by helicopter. There are no other roads right now to the damaged supports, except aerial routes, and we are relying on Aeroflot's help.

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### Third Chernobyl Power Unit Returned to Operation

18220027d Moscow PRAVDA in Russian 6 Dec 87 p 1

[Article by M. Odinets (Chernobyl, 5 Dec 87): "A Reactor Is in Operation"]

[Text] The third power unit of the AES, which neighbors the fourth, the accident victim, yesterday gave industrial current to the country's power system.

Enormous selfless work was performed on its deactivation, on bringing it into readiness, and on thoroughly checking the machinery and mechanisms. The control system and reactor protection have become more reliable. The personnel have passed certification tests.

At the unit's control panel are the people who worked here prior to the accident: shift chief V. Gorokhov, senior engineer A. Gusev, G. Krasnyanskiy and S. Advakhov. Now there are three power units of the AES that are generating electricity.

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### Repair of Damaged Transcaucasus 500-kV Power Line Described

18220027e Moscow IZVESTIYA in Russian 7 Dec 87 p 1

[Article by V. Belikov: "Half a Million Volts—by Hand"]

[Text] Unique electrical-engineering operations are under way in the very center of West Georgia—in Imeretiya—on an LEP-500 [500-kV power-transmission line] which is under voltage and is feeding power to the republic's industrial centers and rural regions. The brigade of specialists supervised by N. Korobkov, supervisor of the laboratory of the Long-Distance Transmission Lines Production Association, is charged with the operation.

At one of the segments of the power route, which passes close to Tkibuli, hurricane winds toppled several supports that were more than 30 meters high. The local repair services managed quickly to eliminate the damage and to arrange for the delivery of power, but under a temporary scheme for suspending the wires.

"Our task now," says N. Korobkov, "is to attach, at the height of a 10-story building a wire over which an electric current of half a million volts passes. Only the specialists of our laboratory are allowed to perform this dangerous work, and they have at their disposal the required equipment and protective clothing."

Chief of the association's line services V. Sibirtsev, who maintains daily communication with the brigade, reports:

"The brigade supervised by Korobkov (there are eight people in it, in all), have already visited the site of the impending work, but they still could not begin repair of the power line because of a strong wind. It must be said that the damage can be eliminated without switching off the power only when the wind is less than 10 meters per second, the relative humidity of the air is no more than 90 percent, and there is a complete absence of precipitation."

"Why such restrictions?"

"These are the work-safety requirements. A man dressed in a special suit, of a conspicuous orange color, for protection against the current is in a suspended cradle-car, which is hung on the wire.

"Every 50 meters it is necessary to install steel separators between the wires, to keep them from striking each other. This can be compared with an acrobatic tightrope trick under the circus dome."

By the equipment is A. Tsintsadze, supervisor of the enterprise for operation of the republic's high-voltage grids:

"As soon as the wind in the foothills subsides, our helpers will be lifted on the supports and will start to correct the damage. Replacing each other up above, the repairmen act deftly and quickly, knowing that wires not fastened reliably can lead to a break and an outage of the system. This can in no way be permitted—winter has set in and the need for electricity has increased sharply, and the LEP-500 is the backbone of Transcaucasia's entire power system."

11409

### Solar-Power Facility Built at Gagra

18220027f Moscow IZVESTIYA in Russian 23 Nov 87 p 1

[Article by V. Belikov (Gagra): "Solar Energy for a Resort"]

[Text] At one of the beaches of the year-round Pitsunda resort, close to Gagra, the assembly of a delicate 150-meter structure—an awning above a terrace for sunbathing, which serves simultaneously as an accumulator of solar heat of a high-capacity solar installation—has been completed

The ribbed roof of the sunbathing terrace consists of hundreds of sections covered on top with glass, and on the inside it is blackened, where coils with ordinary water pass. Such traps for solar rays have good heat insulation made of glass wool and foil, and on a clear day they can heat the operating liquid to 50-60 degrees, and maybe higher.

"The storage tank has a capacity of a hundred tons," explains Engineer V. Abuladze, "and it supplies hot water for two tall buildings—the Mayak and the Iveriya—and also to the dining hall where the vacationers of these resort hotels eat. Later our administration, Spetsgelioteplomontazh [Special Administration for the Installation of Solar-Heating Facilities], proposes to use the roofs of buildings that are being erected in the closed zone at Pitsunda cape for siting solar batteries."

The sunbathing terrace at the beach is the most recent in time, but it is far from being the only such structure in Gagra, facetiously nicknamed, but without requiring even a single specialist for operating it, and it performs its own service. At this time, more productive installations have begun to operate in other places, and in the long term they will appear in large numbers, from Odessa to Alma-Ata and from the Amur region to Karelia. But already today, in late fall of this year, it is the "solar-energy capital." A sixth of the installations used in the country are located here—at sanatoria and vacation housing and watering spas, and even in the citizens' own housing. It is estimated that one square meter of solar-receiver space that uses water as a heat carrier obviates the necessity for consuming 120 kg of standard fuel equivalent per year. Aside from the direct saving of coal or mazut, the free radiant energy emits neither ash nor smoke, which act in deadly fashion on the citrus groves and tea plantations of Abkhaziya.

Solar installations on the roofs of production premises (the specialists call this "combination roofing") has proved itself excellently at the Gagra dairy sovkhos complex, which provides the whole resort with its output. Having noted that for two years now, from May through October, the husbandrymen satisfy completely the complex's requirements for hot water through solar energy, director V. Chachava complains:

"If the installations' efficiency would be increased just a little bit, we could switch off all three large electric boilers."

The sovkhos complex was one of the first to assemble its own solar batteries. They unfailingly insure that solar heat, a gift to Gagra, is not lost!

11409

## PIPELINE CONSTRUCTION, OPERATION

### New Method Developed for Pipe Laying in Permafrost

18220028 Moscow IZVESTIYA in Russian 2 Dec 87  
p 3

[Article by scientific commentator B. Kononov: "Permafrost Instead of Concrete"]

[Text] A method developed by Professor P. Borodavkin yields enormous savings of resources during the construction of northern gas pipelines.

It was all simply genius. But, despite this, unfortunately, it did not receive recognition right away. It was precisely this situation that prevailed in the construction of our high-capacity gas pipelines. Most of them have their start in the North, in the permafrost zone, which possesses the insidious property of spreading heat and being transformed into unstable swamp. If it is considered that there are already about 500 kilometers of gas pipeline that pass through the permafrost zone, and with development of the promising Yamal fields this length will almost double, then the significance of the problem becomes clear.

The traditional pipelaying method consists in excavating a ditch 2.5 meters deep, laying the pipe, and, so it will not "float" upwards, it is weighted down with reinforced-concrete structure. An average of 2,000 tons of reinforced concrete go into each kilometer of northern gas pipeline. Large numbers of plants are engaged in the production of these reinforced-concrete items, and they are brought in from all parts of the country by rail, river, and, in the recent decades, sometimes over hundreds of kilometers by off-the-road-vehicles, one vehicle usually taking about 8 tons.

And now suddenly a scientist announces that none of this is necessary! Instead of 2,000 tons of reinforced concrete, a clever mechanical system can be used that will hold the pipe in the ditch, and about 5 tons of materials will be needed per kilometer of gas pipeline. Two thousand tons versus 5 tons! The difference is striking. By using what?

Petr Petrovich Borodavkin, State Prizewinner and Professor of the Moscow Institute of Oil and Gas imeni I. M. Gubkin of USSR Minvuz [Ministry of Higher and Secondary Specialized Education], has proposed the use of...the permafrost itself as an anchor for gas pipelines. Structurally, his idea looks like this. Holes are drilled from two sides of a pipe that is laid at a depth of 2.5 meters (this operation takes about 3 minutes), and disks with pins are lowered there. This system resembles a rod with one disk of the "cut-off" type. Above, the pins are connected together over the pipe by a metal or polymer coupling. The drilled-through holes are again covered with soil, and in 10 hours the disk proves to be fast from the cold. Such anchors are installed every 10 meters, and the trunk gas pipeline is pulled through the peculiar arched tunnel, which holds it firmly but, at the same time, does not prevent small shifts. While with the usual method, the reinforced-concrete "pillow" does not save it from vertical shifts, and the curvatures that develop lead to breaks in the pipe and to accidents.

Nevertheless, the industry's design organizations have come out against this proposal: it has not been proved, it has not been verified, it contradicts the norms, directives are violated, and so on and so on. A commission, they say, and a proving ground must be established. In brief,



everything should be developed in accordance with the usual scheme, and realization of the idea's value would be drawn out for decades were it not for the perestroika era.

This year the Moscow scientist flew 16 times to the North. He persuaded, proved and demonstrated, and he himself built along with the workmen. And they were the first who completely verified the value of his idea and began to demand at the top of their voices its wide introduction. And one can understand the northern drivers, who ruin their health and wreck machines delivering in fierce cold freight that can be dispensed with. One can understand the agitation of the construction workers who realize that they are senselessly burying in the tundra cement, with which housing and roads could be made and which the country does not have enough of. To all of them "it is a pity for the state...."

It must be said, to the credit of USSR Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] supervisors that they did not try to hide behind the shield of the directives but manifested a true state approach to the business. USSR Minneftegazstroy's Glavtruboprovodstroy [Main Administration for Pipeline Construction], under S. M. Shcherbakov, built in the spring of this year, in, as is said, a sub rosa procedure, 70 kilometers of the high-capacity Yamburg-Yelets gas pipeline by the new method.

It is a risk. Yes. A risk to their office armchair, their position. Nevertheless, the builders even gave a guarantee that they will, through their own profit, repair the sections, free to the operators, if anything happens in three years. And the workers were in accord with this.

Did the vuz scientist take a risk? Of course. With his reputation and prestige in the scientific sphere. Where it is safer to read lectures and to make recommendations to the branches of science and, in essence, not answer for anything, ardently accusing everyone, when the occasion presents itself, of conservatism and a reluctance to recognize advanced methods.

The opponents and skeptics predicted unanimously: in the summer everything will float to the surface, and at best the matter will be finished by USSR People's Control.

But the test section passed the test!

On these 70 kilometers, 140,000 tons of reinforced concrete were saved. This alone yielded 38 million rubles of net profit, without counting the funds for transport and for that use to which the saved material may be put at other construction projects.

And this was achieved thanks alone to the fact that, disregarding all the intermediate elements, the production workers established direct contact with advanced science. Once more the well-known truth was confirmed, that there is nothing more practical than good theory. We shall add only: if it is put to use at once.

Now the innovation must be introduced widely. Enough of the designers' doubts. It is time to adopt the new method with maximum energy. For it promises the country vast savings. On the planned sections of the high-capacity gas pipelines from the Yamburg field a million tons of reinforced-concrete can be saved, and at the Yamal fields 2 million tons!

So the new method now should be not the business of a group of science enthusiasts but of authoritative branch-of-industry institutes, one of the chief tasks of which is the dissemination of valuable ideas and developments.

A new task faces the department of Professor P. P. Borodavkin now. Explosions and accidents at our northern gas pipelines worry them. They themselves have become convinced that there is no reliable means here for diagnosing the state of gas pipelines, there are no methods for forecasting their behavior. And indeed it is these arteries, upon which the normal operating rhythm of many enterprises in the country's cities and export shipments depend. Vuz scientists already have experience in solving this problem. The methods they created have been approved and have proved themselves well on the Carpathian gas pipeline sections. Now it is necessary to transfer them to "northern soil," and to perfect them, taking local conditions into account. Moscow's scientists have now occupied themselves with all their energy with this most important problem.

...I called Professor P.P. Borodavkin. I wanted to read the article to him.

"He has flown to the North," I was told.

## LABOR

### Gosplan Ratifies Wage Regulations, 1988-1990

18280029a Moscow *EKONOMICHESKAYA GAZETA*  
in Russian No 52, Dec 87 p 15

[Statute: "Model Statute On the Formation of a Wage Fund for 1988-1990 for Those Enterprises, Associations and Organizations Which Have Changed Over to Full Cost-Accounting and Self-Financing", Approved by USSR Gosplan]

[Text] This Model Statute was developed on the basis of the USSR Law on the State Enterprise (Association) and provides the following procedure for forming a wage fund, for the 1988-1990 period, for enterprises, associations and organizations (hereafter referred to as "enterprises", except when talking about particular features of an association) which have changed over to full cost-accounting and self-financing.

1. An enterprise's wage fund is formed in accordance with the norm for net output, or other gauges of output (jobs and services) established by the ministry (department) for calculating labor productivity.

With the authorization of a ministry (department), an enterprise can form a wage fund by the following methods:

according to the norm for wages per unit of output (jobs and services) in physical terms, or per ruble of volume of output (jobs and services). Here, an enterprise's total wage fund is formed as the product of the norm and the extent of the volume of output (jobs and services);

according to the norm for each percent of growth in volumes of output (jobs and services). Here an enterprise's total wage fund is formed from the base general wage fund and the amount the fund increases (decreases), as calculated according to the norm.

2. It is recommended that the norm for wages per unit (volume) of output (jobs and services) be used when the structure of the output produced by an enterprise remains stable throughout a five-year plan period and there is little likelihood of drastically changing the share of the overall volume of production of those types of work which deviate considerably as regards the outlay of wages per ruble of output (jobs and services) in the overall volume of production, compared to the enterprise's average indices.

3. Norms for forming enterprises' general wage funds are derived by using initial data, norms and five-year plan indicators and calculations, taking into account the need for providing the normative relationship approved for 1988-1990 between increases in the average wage and labor productivity calculated by the running total since

the beginning of the five-year plan period, and by producing, usually at operating enterprises, the entire increase in output (jobs and services) by increasing labor productivity.

The ministry (department) and the state production association, within the limits of the initial data and norms prescribed for it, and as per agreement with the appropriate trade union organs, set the standard allowances for forming a general wage fund for subordinate enterprises, taking into account their special regional and sectorial features and remembering, where necessary, to develop unified standards for those groups of enterprises having similar production structures (jobs and services).

The standards approved for enterprises are not subject to change prior to the end of the 12th Five-Year Plan period.

4. When calculating the general wage fund according to the target for increased volumes of output (jobs and services), the base general wage fund for a given year is derived from the wage as shown on the previous year's account, which:

**increases** by the amount of the relative savings in the wage fund;

**decreases** by the amount above the fund compared to the fund formed in accordance with approved norms and actual work results.

The base wage fund, which is calculated according to its anticipated fulfillment, is improved in accordance with data from the annual report. The quarterly distribution of the improved annual base wage fund is carried out independently by the enterprise and is not subject to change.

During its quarterly distribution of the base general wage fund, the enterprise usually sees to it that labor productivity in the plan period exceeds increases in the average wage (minus payments from the material incentive fund).

5. The reserve wage fund for 1988-1990 may not exceed the difference between the total amount of the wage fund for the ministry (department) stipulated by the prescribed initial data, normatives and five-year plan indicators, and the sum of the enterprises' wage funds, which are calculated in accordance with approved norms plus the remainder of the ministry's (department's) reserve, carried over from the previous year.

Sums are allocated from the above reserve at the expense of assets held in the production development funds, the enterprise's fund for science and technology and social development and, where needed, from assets from the centralized fund for development of production and science and technology, and the reserve of the ministry's

(department's) social development fund as well as the current outlays provided for by the planned calculations for production costs (jobs and services), including those for enterprises and facilities recently put into operation, and without any change in the relationships between the budget and the regular deductions for the central fund and the ministry's (department's) reserves from the enterprise's estimated profits.

The wage fund's reserve assets are used to cover enterprises' increased wage outlays stemming from structural improvements in production (made possible by meeting state order targets), natural calamities and abrupt changes in natural climatic working conditions.

For those enterprises and units recently put into operation, which are constructed in accordance with an approved list with central capital outlays and when putting into operation social and cultural facilities which are over and above those called for in the five-year plan's targets, the assets used to form the wage fund are allocated from the ministry's (department's) reserve fund and from the state production association for the wage fund. The amounts of these assets are determined by the ministry (department) and the state production association for norms, are set taking into account the standard time periods needed to develop production capacities (social norms) and are stipulated in the plans for economic and social development of enterprises for 1988-1990. These assets, should the deadline for putting new enterprises and facilities into operation not be met, are not to be used for other purposes.

Lists of enterprises and installations recently put into operation and nature conservation projects, along with recommendations for deadlines for their opening up, are approved by the ministry (department) in accordance with established procedure, and taking into account the norms provided for in USSR Gosplan Decree No 95 of 10 May 1984 and other normative acts.

No additional wage funds earmarked for workers involved in developing its capacities are allocated to any enterprise which fails to meet the deadline for opening up these capacities. The wage fund for such enterprises is formed according to a procedure established for operating enterprises.

From the reserve mentioned earlier, a ministry (department) or a state production association can assign enterprises repayable assets to be used for wages in the amount of the excess (overexpenditure) of the wage fund according to approved norms and actual work results.

An enterprise's general wage fund can be increased by a ministry (department) when implementing central measures for wage increases in compliance with decisions made by directive organs.

When a ministry (department) or state production association allocates long-term assets for wages, these assets are accounted for individually for every year of the five-year plan period, with no change in the approved standard allowance for forming a wage fund.

6. The general wage fund for enterprises includes the wage funds for all the subdivisions and structural units making up the enterprises.

Within the limits of the general wage fund, and taking into account the specific nature of its production and the tasks facing it, an enterprise can independently establish a wage fund for individual types of activity and categories of workers.

An enterprise can unite wage fund and material incentive fund assets into a wage fund which serves as the sole source of all payments made to workers for the results of their labor.

7. Expenditure of the wage fund by independent enterprises and associations is checked quarterly for these enterprises and associations as a whole by USSR banking institutions (taking into account the structural units making up the association), with the results (savings and expenditures) determined from a running total since the beginning of the year.

The assets for the wages of all workers in enterprises (associations) for whom the standard allowance for wages per unit (volume) of output (jobs and services) has been approved are allocated on the basis of the approved standard amount and the actual volume of output (jobs and services) for the quarter under review in accordance with the indicator used to form the wage fund and the additional increase (decrease) of the wage fund above the fund formed according to the standard allowance.

The assets for the wages for all workers in enterprises (associations) at which the standard amount of wages for increased output (jobs and services) has been approved are allocated on the basis of the quarterly base general wage fund, and are increased (decreased) by the amount this fund is increased (decreased), this being calculated according to the approved standard and the actual increase (reduction) of the volume of output (jobs and services) for the quarter under review according to the indicator used to form the wage fund and any additional increase (decrease) in the wage fund above the fund formed in accordance with the standard allowance.

The amount of the assets owed to an enterprise (association) for wages is precisely defined in accordance with the work results for one year.

8. USSR banking institutions see that enterprises observe the approved normative relation between the increase in the average wage and the increase in labor productivity for the duration of the five-year plan period



and that they hold the appropriate portion of the material incentive fund (wage fund) in reserve or else transfer these assets into the social development fund should there be a disruption in the normative relation of the results of their work during the year.

When calculating the actual average wage considered when monitoring the normative relation for the year under review, no consideration is given the amounts of wages paid within the limits of the savings in the fund, which savings result from releasing numbers of workers, and increasing the enterprise's material incentive fund for 100-percent fulfillment of its delivery obligations.

9. As per agreement with USSR Gosplan, ministries (departments) determine the sectorial features related to the use of this Model Statute.

12659

**Resistance To Individual Labor Activity Observed**  
*18280030a Moscow OZONEK in Russian No 47, Nov 87 pp 23-24*

[Article by Yuriy Krichevskiy: "To Be, Or Not To Be?"]

[Text] These days, no one will argue against the economic advisability of cooperatives. The eminent Soviet Scientist and Academician O. Bogomolov feels that one promising way to rejuvenate the domestic consumer market is, specifically, to expand the individual labor activity of cooperatives as well. The example of our fraternal socialist countries is extremely cogent here. So why are the cooperatives having such a difficult time becoming a part of our life?

**From a Cooperative's Journal**

9 July 1987. 9:30 am. Received by A. Panin, chairman of the Mossovet [Moscow City Soviet of Workers' Deputies] Ispolkom for ITD [Individual Labor Activity] and Cooperative Activity A. Panin, for approval of our charter. He referred us to N. Blagireva. 11:00 am in Blagireva's office. Comrade Blagireva leafed through the charter and told us to remove the figures from the text and redo them. 11:20 am. We leave. She suggested I call about another meeting on the 10th at 9:30 am.

9 October 1987. Finally called Blagireva back at 1:20 pm. Meeting set for 4:00 pm. Arrived at 3:30 pm, she saw us at 4:30 pm. Blagireva compared Kompleks charter with model cooperative rules published in EKONOMICHESKAYA GAZETA. As the texts were not the same, she sent us to a lawyer. 17 October. The lawyer, having heard from Blagireva, told us, "You've been bothering everyone here for six months. If you want to work, do what you're told." 5:20 pm. Returning to her office, we found that Comrade Blagireva had inserted a number of comments and corrections in our rules, and had underlined individual statutes. We nearly blurted out the promises made us on the television show "Man

and the Law", which was all about ITD, and got the following response: "What if they do say a lot of things in the press; those are a few hare-brained schemes, not the law. I advise you to copy the Model Rules word for word. And don't forget: you're only allowed to do business with private persons. All your payments are in cash, but it is mandatory that a cooperative's cash assets be kept in the bank."

5:40 pm. Once again we leave Mossovet with empty hands, another whole working day wasted for nothing, and we wonder: why use the bank if we're paid in cash? And the most interesting thing is that our basic raw materials, materials and equipment, as everyone knows, are supplied by transfer....

**ALTHOUGH THE WORDS RANG TRUE**

MAGATE [International Atomic Energy Agency] experts cite control system reliability and fast-action and quality in safety rod insertion as decisive safety factors in nuclear reactors.

So a single research group has developed electromagnetic elements which actuate many times faster than those now used at nuclear power stations. Moreover, the inventors' collective has suggested that electromagnetic elements which can operate in the presence of radiation be used on robot-bulldozers which do not "want" to operate in powerful radiation zones where electronic elements break down.

Candidate of Technical Sciences Ruben Arturovich Agaronyants, along with his group, has joined the Komplex Cooperative Association, which is now being set up. It will work on fundamental discoveries related to the magnetoelastic electromagnetic effect and the phenomenon of dynamic magnetic stability in electromechanical systems (several of R. Agaronyants' monographs on this topic have been published by Nauka). The savings anticipated from introducing the discoveries in the machine-building sector alone should amount to about R1.5 billion per year.

"What of it?", asks the reader. Nothing about it. The discoveries made by Agaronyants and his colleagues have been known of for a long time, although they were ignored by the GKNT [State Committee for Science and Technology], the USSR Academy of Sciences and Minpribor [Ministry of Instrument Making, Automation Equipment, and Control Systems, as were the opinions of outstanding experts. The Chernobyl tragedy, along with others, also answered the question of whether such research was really needed by domestic science and technology. We note that the inventors' collective did not wait to find out, but wrote letters to various instances and appealed to society from the pages of the journal IZOBRETATEL I RATSIONALIZATOR [Inventor and Innovator]. The result? The ministries responsible for promoting advanced production methods gave the Kompleks working group the cold shoulder of formal replies.



## THE BRAKING MECHANISM

The braking mechanism referred to here is usually connected to the evil intentions of individual persons. There appear to be more bureaucrats opposing intelligent undertakings than you can shake a stick at. Understanding why they act this way is much more difficult. Not least important, it seems to me, are the perceived stereotypes of, and the persistent enmity to those who, because of the sluggish thinking of those perceiving them, have come to be called "nepmen".

With the passage of time, the image of the cooperative worker has been transformed in our consciousness from that of a greedy peasant with a basket of cranberries or a sack of furs to a dashing fellow in a little cloth cap made of "seven small sections of cloth and one rivet" measuring off pieces of pre-war calico on a counter-top. Look at the way nepmen are depicted in films. They are either pathetic figures in a bow-tie with darting eyes or americanized businessmen wearing breeches and high rubber-soled shoes. And this when the New Economic Policy called another type of employer into being—a far-seeing, courageous and energetic person who in no wise restricted his thoughts to personal gain. Among the people operating cooperatives at that time, there were many who employed members of the scientific and technical intelligentsia, and who fought hard to bring their projects to fruition. These are the very people who perfected the essence of Lenin's rules regarding the NEP [New Economic Policy], and who developed its deeper currents; its Gulf Stream, if you please.

I dare say, there are people like this who are turning to cooperative work today as well. It is very difficult for them to overcome the opposition of those who perceive their activities as motivated primarily by personal profit and a thirst for gain. Certainly there are such people among the new co-operators. But they are not, as we say, in control of the course of events.

The initiative-filled Kompleks group is made up of 25 highly-skilled specialists, who are acutely aware of the needs of the city's public utilities, of construction bottlenecks and production demands. And not only are they aware of them, but are capable of quickly and efficiently meeting these needs and demands and making profits for the state and, naturally, for themselves as well.

Let me introduce them. Yuriy Sergeyevich Krikorov (chairman), is a construction engineer, presently retired. His brother Vadim Sergeyevich, who is a doctor of technical sciences, a professor and USSR State Prize laureate, and is deputy director of AmurKNII [Amur Combined Scientific Research Institute], as well as director of the USSR Academy of Sciences' DVNTs [Far East Scientific Center] Engineering and Technical Center, is prepared to head up this cooperative's Far Eastern affiliate. Gennadiy Semenovitch Buzov is a candidate of technical sciences and a mine construction engineer, and

has invented 22 widely-adopted inventions. The pensioner Vladimir Viktorovich Dubrovskiy is a technician-mechanic, and recently held the post of Glavmosremont Administration chief. Oleg Aleksandrovich Lukinskiy is a laboratory director at Rosrestavratsiya [Russian Republican Specialized Scientific-Restoration Association]. Vladimir Viktorovich Krasov is a candidate of technical sciences, and has won both the State Prize and the USSR Council of Ministers Prize.

As we can see, these are serious people, people who inspire confidence.

## THE "KOMPLEKS" PEOPLE

During the previously-mentioned television program "Man and the Law", First Deputy Chairman of the Mossovet Ispolkom Yu. M. Lushkov promised the cooperative's organizers that he would allocate, on an experimental basis, a 2,000 square meter premises needed by the association. The members of the initiative-filled group, enthused by this authoritative assertion, once again rushed to the "corridors of power" and again ran into bureaucratic obstacles. They now have no more production base than ever.

Nor do they have a Kompleks Cooperative, for the time being. It's apparently too unusual. It would be fine if it were a cooperative cafe or studio. For you see, they want to do business with state enterprises, and what is more, on an all-union scale, which is dazzling, considering the range of their scientific and technical proposals. They will have no end of troubles.

That's about the way it is perceived by Individual Labor Activity representatives, who sometimes forget Lenin's well-known view of socialism as a structure of civilized cooperatives. "...We have been forced to acknowledge a radical change in our entire point of view towards socialism," wrote the leader of the revolution in the article 'On Cooperatives', which implied not only that the peasantry should be formed into cooperatives, but that the program of building socialism in our country be implemented on a cooperative basis as well."

## THEY WHO DO NOT EXIST

They do exist, of course. And at the same time they do not exist, since the ideas and concrete inventions which they engendered have found no practical application. There is no R. Agaronyants and his group. There is no O. Lukinskiy, author of an original method for waterproofing basement overheads and walls, who introduced his creation all of 18 years ago. There is no G. Buzov, a member of the highly-motivated Kompleks group, who fears that a similar fate awaits the mechanism he has invented to eliminate manual labor when driving tunnels, constructing silo pits and underground (and non-seeping!) reservoirs for storing fuels and lubricants. No, and it turns out that there is another potential co-operator, Doctor of Technical Sciences A. Larin, who led

the way in developing a design for a unique load-lifting device. Kompleks is prepared to build prototypes, but they have no place to work, are still being denied a production base....

...at a time when a small plant which cost R3.5 million stands empty in Zelenograd. It belongs to Soyuzspetsremenergo and has not been in operation since 1983. So rent the plant to the cooperative, if Soyuzspetsremenergo doesn't need it! This would surely be better for everyone. The Vladimir Oblast is putting a former sanatorium consisting of 5 buildings at Kompleks' disposal, along with a silk-weaving mill which has long been closed. "You can't do that!", protests the oblispolkom, even though the cooperative is registered in Moscow's Gagarin Rayon.

### ON THE SHORES OF INITIATIVE

Why won't they give Kompleks a chance? Is there something threatening about its single specialism? There's no reason to fear the inevitable opinions which pipe up when new cooperative forms are being devised. Doctor of Historical Sciences and Professor V. Dmitrenko, a well-known economic policy researcher of 20 years' standing, talking with an IZVESTIYA correspondent, cautions against disregarding the fundamental Leninist principle of co-operation: first there, then here. "When a city's or a rayon's interest in co-operation 'falls off,'" points out V. Dmitrenko, "it begins to occupy the realm of what is permitted. And the bounds of this realm are not determined by those who set up co-operation, but by those who permit it. So initially rigid, albeit vague, restrictions are assumed, which make it difficult for this form of activity to develop."

This scholar feels that in 20 years economic independence has blended into a centralized system which has united and defended the interests of cooperative workers. For the present time, each cooperative is on its own, without a cooperative society, a cooperative system or, finally, a cooperative bank, to back it up. But the fact is, earned wages should work. For the good of the cooperative and the good of society. Otherwise the economic chain is broken, leaving the cooperative with nothing but its economic ties and enough income for personal consumption. No solution has been found to the problems associated with production expansion, of affiliates and of what to do with profits if they are high.

### STRUCTURE

So we can see that the cooperative is not a modern innovation. Its structure has changed, but its essence has remained the same, for the freedom and relaxedness of human relations under socialism are themselves conducive to such forms of joint labor among people who are enthused by a commonly-shared idea and who are united for the purpose of bringing it more successfully to fruition, with benefits for the State and, of course, for themselves as well.

Unfortunately, most of the cooperatives now being set up operate in the area of trade and domestic services. But the interest of these cooperatives is concentrated only on turning a profit. But is this really the purpose of a cooperative? A cooperative's merit does not lie in the amount of profits it earns. And not even in how much and what it produces. The main thing is in the number of people it will be able to unite.

Kompleks is a cooperative multi-specialty scientific and technical and assimilative association of 300 persons. Are you interested in its organizational structure? Very well; it is certainly worth mentioning. A governing board of 9 persons is chosen in accordance with the rules. Paid members of the board include the chairman, the deputy, the chief designer, the bookkeeper, the supplier and the dispatcher. A percentage from the overall income made from jobs performed (from approximately 25 to 60 percent) is given to the rest of the members. Within each brigade, the total of earned monies is divided according to the coefficient of labor participation. The report is turned over to the bookkeeper every month and the wages are transferred to the cooperative members' individual accounts. Kompleks is made up of students and scientists alike, since there are departments enough for all: a construction section, a section for planning and surveying jobs, a service and utility line repair department, a personal services section, an inventions section and a department for propagation of advanced knowledge among the population....

The sections have been involved in a month of exhausting struggle with Mossovet in order to gain recognition for this type of cooperative and its full program.

"We want to function as a general contractor to build cooperative garages and parking lots in Moscow," says Yu. S. Krikorov. "But since GlavUKS [Main Administration for Capital Construction] is the customer rather than the garage cooperatives themselves, we got turned down again. Meanwhile, this huge city so far has no specialized organizations involved in this type of construction. Glavmosstroy [Main Moscow Construction Administration] and Glavmospromstroy [Main Moscow Industrial Construction Administration], for whom this work front was registered and who are supposed to execute it have been ruled out: they say they have neither enough workers or capacities to handle it. The upshot is that the problem isn't going away; it's getting worse with every passing year.

The people who would like to restrict the Kompleks Cooperative to the level of a shop always refer to the absence, in the decree, of special clauses which apply to this range of activities for a potential cooperative. So once again we have to remind them clearly and unambiguously that special-purpose cooperatives are not forbidden, but are considered to be allowed.

## GEESE, FISH AND SO ON

The reason they are eccentrics is so they can dream. They chose an abandoned village in the Ugransk Rayon's Smolenshchina and thought of a way to construct a dike to hold the spring water and to use pensioners from Moscow to do the work of breeding the fry of valuable fish breeds and to fatten geese and hens from early spring to late autumn. They even estimated the economic effect: as many as 500 geese per season per hectare and up to 7 quintals of commercial fish from the reservoir. Not really too bad, is it?

And now there are geese and fish there! The Kompleks firm's price-list, in addition to the construction of summer cottages and cooperative garages, lists an innovative roof and basement sealer and a service for cleaning heating systems of stony scale. Right now in Moscow, 25 percent of the roofs leak, a great many cellars are filled with water and are collapsing and dozens of km of permanently stopped-up central heating piping are simply cut out and thrown away. The cooperative is prepared to solve these problems, even if it has to be done tomorrow. But so far no one is requesting its services.

But that still hasn't stopped these oddballs. Familiarize yourself with their proposals and you automatically get the idea that the cooperative can do anything. It can go to Blagoveshchensk and organize waste-free methods of recovering precious metals for AmurKNI. It can repair factory piping and save standard fuel. Or install piezo-electric light switches for apartment house entryway lights so that at night only the night lights are on for each two of the passage's stairwells (Mossovet, in its fight to economize on electric power everywhere, spent 6 months studying this proposal). It can screen off above- and below-ground tanks with polymer films with multicolored anchoring fins, using them as decorative accessories on building panels. It can install modern ventilating systems in old knitting mills, where one might as well wear a gas mask when working. This cooperative can carry out preventive maintenance on plant transformers and so forth and so on.

The above, however, are far from being all this cooperative is capable of doing. This band of eccentrics has an in-reserve organization capable of mass-producing polychromatic [polisvetanovyy] film, whose importance to the national economy would be difficult to overestimate (just one application of this film in greenhouses boosts cucumber yields by 20 percent and tomato yields by as much as 60 percent). The Kompleks staff has been wondering whether they should take up vacuum deposition, photolithography, powder metallurgy and other techniques, and whether they could initiate "in-house"-production of a varied assortment of high-demand goods—from solar batteries, monocrystals and films to special circuit boards with an arrangement for simple microcircuits (radio equipment circuits, electronic children's games) on the equipment in their inventory.

Last year USSR Gosplan and USSR Gosstab set a goal of finding out whether the system presently being used is capable of dealing with the problems of using secondary resources rationally. It was found that implementing the intended measures necessitated increasing the work force of Gosstab manufacturers from 16,000 to 80,000 or 100,000 persons, and that some R2 billion in capital investments would have to be allocated to set up manufacturing centers. The cooperatives are getting by without additional outlays and appropriations, and with a negligible number of people and a great deal more managerial skill. The first procurement associations were set up on an experimental basis, and are now proving that this is the correct course to take.

So Kompleks ought to be allowed to experiment a little on secondary raw materials, since the risk isn't that great, even for a start in the Gosstab system.

And the cooperative's portfolio of proposals keeps growing. As I was preparing this article for print, Doctor of Technical Sciences and Professor V. G. Khozin's "team" was developing a new scientific line of inquiry related to modifications of polymers: antiplasticization, which opens up opportunities for devising versatile, inexpensive anti-corrosion coatings and preservative compounds from production wastes. They have already produced their first experimental batches from epoxy polymers (I've seen them myself!). Introduction of these miracle composites as part of the program developed by Kompleks will save the national economy up to R450 million.

Ah, these oddballs: these eccentrics! They fuss over their preservatives, whose advantages over the traditional types are obvious to any specialist. They prove to the imperturbable authorities that before long universal domestic polymers will be able to be bonded to reinforced concrete, metal and wood, and that highly-developed countries will be willing to purchase them from us.

And the response they get is: who, pray tell, will promote them? Unfortunately, no one has been found who wants to, except for the Kompleks eccentrics, who offer their knowledge, experience and initiative to the state. They are making the offer today, so that tomorrow, as has occurred on more than one occasion, a real export won't turn into an import.

## FROM THE LIPS OF THE POET

In B. Akhmadulina's brief introduction to a selection of lines by Boris Chichibabin recently published in OGO-NEK, we find these words:

"...we can think about general incomes only when any person with any human talent can be employed in his own business, and at his own discretion. Otherwise, the



general losses are irrecoverable, and cannot be indemnified." This sensitive lyric poetess has, in her measured cadences, formulated an idea which would do credit to the economists.

Is it possible that our industry is really in no condition today to bring such valuable developments to fruition? Then let Kompleks operate as a general contractor, as it is trying to do, to help introduce these developments into production. And Mossovet (or other instances) can approve its appropriate official status. It is high time to give the go-ahead to Kompleks and its projects, which are sorely needed by the State.

Moscow's hot-water supply pipes are completely changed every 15-20 years. The method for flushing them proposed by Kompleks extends their service life 3- to 4-fold and cuts the costs to maintain them by a factor of 10. I'm no longer talking about leaking apartment building roofs, which foreign specialists are often called in and paid currency to mend.

People have grown weary of imperfections in the surrounding reality and perhaps this is why, in welcoming the cooperative movement, they expect a real and immediate yield from it as well as the fastest possible solutions to everyday problems, and they expect it to bring economic activity to a state of health. These expectations are justified.

It is time to clearly define the place cooperatives occupy in our life, and to help support some of the burden of bothersome and difficulty-laden responsibilities taken on by these enthusiasts.

Kompleks and the other cooperatives of the same mold certainly constitute an organic part of our socialist future.

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## EDUCATION

### Computer Education in Georgian Schools Described

18280038 Moscow PRAVDA in Russian 22 Jan 88 p 2

[G. Chogovadze, doctor of physicomathematical science, director of the Science Department, and head of educational institutions for the Georgian Communist Party Central Committee: "A Student Has 15 Minutes a Week With the Computer"]

[Summary] Computers are being used more in Georgia's educational curriculum. In several Tbilisi schools, upperclass students, with a view toward job-related skills, are learning the basics of programming. Participants who receive a grade, not lower than a "4" (B), for

the computer course, together with their secondary education diploma, become certified programmer-technicians and may be hired by a computer center. More than 5,000 senior students have begun the program in the last several years, and 750 of them have become certified as programmer-technicians.

The number of computer centers in the Georgian republic has grown to 35. They provide experience for students from 40 nonspecialized schools. Summer computer camps have been organized this year for nonspecialized and vocational schools.

Basic problems in computer training still exist. There is a shortage of qualified instructors. Computer equipment is lacking to meet growing needs. From 1986-1987 not more than 5 percent of students studying this subject had an average of 15 minutes per week in actual time with the computer. The number of students studying to be programmer-technicians is roughly 2,200. Each of them have had daily access to an industrial computer for 20-30 minutes. In addition, many users complain about the dependability of school computers and the difficulties encountered in getting them repaired.

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## DEMOGRAPHY

### Statistical Commentary Reveals Population Fluxuations

18280034 Tallinn SOVETSKAYA ESTONIYA in Russian 1 Jan 88 p 2

[Article by V. Petrunya, TASS correspondent: "How Many of Us Are There—What Kind of People Are We?—Demographers Answer These Questions in the Language of Numbers"]

[Text] We celebrate the New Year with the familiar ringing of bells at the holiday table, at a child's cradle, or at the workplace. In 1988, in the land of the soviets, how many of us fellow citizens are there all together? Demographers as yet have not sorted out the most current data via fast computers (but that will take place soon after the New Year). However, it's possible to throw out an approximate number. There are 285 million of us.

It is a simple matter to calculate the present population of the country, but to give an expanded picture of the demographic situation is much more complex. According to specialists, that is why the task, being what it was at the beginning of 1987, has just been completed now at the end of the year by the USSR State Committee on Statistics. So let's take a look at ourselves in a purely numerical dimension, with a correction that indeed there are already significantly more of us.

In any case, in 1986 we, in a very dynamic, demographic way, increased by 2,873,000 persons. There were more newborn babies than ever, numbering 5,610,800. Yet

not long ago from 1983-1985 a disturbing tendency had developed: the birth rate dropped and the death rate grew. But in 1986 the melancholy farewell with loved ones was felt 210 thousand times less than the previous year.

It isn't easy to explain this noteworthy tendency. However, demographers confidently maintain that particularly measures for the struggle against drunkenness and alcoholism have not played a final role in making life more healthy. I can't help but agree with this.

In 1987 there were 281.3 million of us all together. If one were to divide the entire population into five-year age groups, the largest would be infants, numbering 26.1 million. It cannot be denied that this is a healthy, promising sign. Then come the 25-29 year-olds; 24.7 million. Then the 5-9 year-olds; 23.2 million, the 10-14 year-olds; 22.3 million and the 30-34 year-olds; 22.2 million.

Here is a picture of society's constructive possibilities. The working population includes 158 million persons. The reserve for its replenishment, including, of course, infants and those who are already preparing to enter independent work life comes to 75.9 million persons. There is a term currently in use among demographers: persons older than working age. In other words, pensioners are people who have given their strength, knowledge, and energy to society and have earned the right for relaxation. At the beginning of 1987 they numbered 47.4 million.

I remember that in the past, approximately a quarter of a century ago, there was a popular melancholy song that or every 10 gals there are 9 guys. The years have passed and statistics have also slipped away into the age maze. But according to statistics, 45-49 year-old women are approximately equal to men in number. However, the picture becomes more contrasting after 60 years of age. For 1,000 men there are 1,775 women. In the 65-69 age range there is the acute problem of widowhood. For 1,000 men there are more than 2,130 women. Beyond the age of 70 which, alas, the average male age doesn't reach, our grandfathers are 2.8 times fewer than our grandmothers. They say that the man is faced with more responsibilities in life. He is head of household as well as breadwinner. The burden of stress more heavily weighs him down. Nature has given him less endurance than it

has a woman. Maybe this is the case. Only let's not forget the other side of statistics. Widows, whose husbands did not return from the war are living out their days....

That is why there is still a distortion in the average statistical ratio. There are 132 million men and 149.3 million women among us. The melancholy song is forgotten early. Especially since its "age" was not limitless. The youthfulness of society already bears other problems, other statistics. Among the newborn, for every 1,000 boys there are 960 girls. Such a clear example of an unbalance has reached the 30 year age limit.

Most of all, newborns have mothers between the age of 20-24 years. For every 1,000 women there are more than 189 in that group. But also 25-29 year-olds often experience the joy of motherhood. There are 142 newborn for every 1,000 women. Moreover, the average statistical indicator (keeping in mind women from 15-49 years) is for more than 78 children born within the year.

Putting age aside, there are still significant geographical differences in the homes filled with the joys of motherhood. Most of all, it is felt in Tajikistan in 1986 with 182 newborn for every 1,000 women. Then in Uzbekistan with more than 160; in Turkmenistan with 154; in Kirgiziya with 138; in Azerbaijan with 104. Least of all in the Ukraine with 61; in Estonia and Latvia with 62; in Lithuania with 65 and Russian with 66.

There is a belief among demographers in average future life expectancy. It signifies the average number of years that one or another generation is expected to live of those already born if it is assumed that in the course of its existence the mortality rate will be equal to the present-day level in separate age groups. So then from 1926-1927 (then the population of the European part of the country was taken into account) such an average life expectancy was 44.4 years. From 1938-1939 it rose to 46.9. At the end of the fifties it reached 68.5 years. Then there was a decline. From 1984-1985 an increase was noted again to 68.1 and from 1986 it was 69 years.

For the New Year, it is the custom to wish someone health and a long life. Let that be so! And let the demographers confirm it. Let us keep our convictions. Our wish will come true.

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## RAIL SYSTEMS

### Railroad Communications Systems Outlined

18290061a Moscow ZHELEZNODOROZHNY  
TRANSPORT in Russian No 6, Jun 87 pp 37-39

[Article by Candidate of Technical Sciences S.S. Kosenko: "Railroad Communications: State and Prospects"; UDC 656.254]

[Text] The intensification of the work of rail transport is making ever greater demands on railroad communications—the technical basis of the operational control systems of technological processes connected with the shipment of freight and passengers for the national economy. A comprehensive program for the development and improvement of railroad signaling and communications on the railways of the country has been developed and is being realized that envisages the modernization of existing networks and the active incorporation of fundamentally new communications equipment. The basic thrust of the work is better satisfying the needs of the various transport services for communications equipment, expanding the functional capabilities of the systems, raising the efficiency, quality and reliability of communications and improving the working conditions for operators and support personnel.

#### The Primary Communications Network

The development of the primary cable communications networks is a paramount task. This will make it possible to develop automated communications between the ministry and the railroad administrations, divisions and line enterprises, raise their reliability and quality and fully satisfy the need for channels for the automated communications systems of the various services. This will moreover facilitate the accelerated creation of an automated rail transport control system, as well as the centralized dispatcher management of train traffic, and will make it possible to reduce operating expenditures considerably.

The rate of incorporation of cable lines is high. Their overall length has grown by 2.5 times over the last ten years alone. It is planned that all railroad administrations will have cable communications lines to MPS [Ministry of Railways] by the end of the current five-year plan. As is well known, a two-cable trunk line using balanced all-in-one MKP cable has been adopted as the standard for rail transport. The multiplexing of this trunk using K-60p transmission systems makes it possible to organize about 500 audio-frequency (AF) channels and 12 low-frequency (LF) channels; 10 signal pairs are used as signaling channels in the railway signaling systems. Roughly a fourth of the AF channels are used for railroad communications, and the rest are for trunk communications. In a number of cases, however, especially on the main routes of the network, where it is necessary to organize communications channels with several railroad administrations along one trunk line, the

channels of the trunk prove to be insufficient. The number of channels between the railroad divisions and line subdivisions will be made possible by a specially developed K-24T transmission system (the ASTRA apparatus). This only partly solves the problem, however.

The line structures of the trunk cable make most efficient use in multiplexing of its digital transmission systems with pulsed-code modulation. These systems possess enhanced noise immunity, stability of channel parameters and independence of transmission quality from the length of the communications line. Compared to transmission systems with frequency-division multiplexing, they make lesser demands on the mutual shielding of circuits in the cable and the presence of outside interference. The choice of pairs suitable for multiplexing is also simplified, as is the adjustment of intermediate and terminal apparatus.

All of these virtues put digital systems among the most promising ones. IKM-30 systems are already being used at the major rail centers and on the major line sections to create powerful clusters of junction lines and channels for real-time process communications and telephone and data transmission. The expanded incorporation of more efficient IKM-120 digital transmission systems that make it possible to double the number of AF channels compared to the multiplexing version of the analogous K-60p system is being proposed for the near future. The employment of digital transmission systems with the capability of allocating channels to intermediate stations is being proposed for departmental communications channels. This apparatus is already being developed. The possibility of organizing all types of railroad and departmental communications using 2-3 IKM-120 transmission systems is a real one that would permit a decrease in the need for low-frequency cable pairs along with a rise in the efficiency of line-facilities utilization.

A digital transmission system can operate using both wire or fiber-optic communications lines. A pulse-coded modulating device is easily connected to electronic switching systems and makes it possible to create integrated communications networks that combine the technologies of multiplexing, switching and various types of communications using unified equipment. The construction of cable lines using MKKP all-in-one railroad cable with two small-diameter coaxial pairs, as well as the construction of fiber-optic communications lines, is currently underway.

An experimental single-cable fiber-optic line is being built as part of a two-cable signaling and communications line using balanced cable. IKM-120A apparatus is being employed on both lines. The use of the AF channels of the IKM-120A system is envisaged for organizing trunk, railroad and division communications, while an apparatus with audible-frequency selective call-up will be used for real-time operational channels. The railroad and trunk communications on the fiber-optic cable is



backed up by IKM-120 systems operating using balanced cables. Backup for the AF group channels for real-time operational communications via fiber-optic cable is accomplished using physical pairs of balanced cable.

### Secondary Communications Networks

Improvements in the complex of interacting equipment that constitutes the primary network is facilitating the creation of channel clusters of the necessary capacity at all levels of the network for modernizing and expanding the secondary networks of railroad communications both for general-purpose and for real-time operational use.

The **automatically switched general-purpose telephone network** is currently being actively developed. Over 500 channels are added to it each year, and the circle of users of this network is expanding. Every year ATSs [automated telephone exchanges] with a total capacity of 20,000-30,000 numbers are put into service, some of which are used to replace two-motion step-by-step systems that have outlived their usefulness. The low-capacity YeSK400Ye, KRZh-102 and KRZh-202 ATSs are being incorporated at high rates to automate the local telephone communications of small stations and enterprises, plants, depots etc. The reconstruction of the ATSs of railroad administrations and divisions is continuing. Transit centers are being built here at the same time. Electronic switching centers will be used in the future with the more widespread utilization of digital transmission systems. The incorporation of the Kvant quasi-electronic exchanges using ferrite connectors and electronic control machinery has already begun. The Kvant switching apparatus makes it possible to construct terminal, junction and central exchanges, as well as automatic switching centers, and moreover at all exchanges the connecting lines can be distributed among the outside communications lines in any combination. The establishment of bypass connections between points on the communications network is also ensured. A system for the automatic monitoring and diagnostics of the apparatus is also envisaged.

Being developed as part of the Kurs unified equipment complex is a set of electronic devices for tone dialing which will eventually replace the functionally obsolete DATS- and KDN-type relay devices. The use of the new apparatus will make it possible not only to raise the reliability and stability of network operation, but also to create new departmental automatically switched telephone networks (based on clusters of K-24T-type AF transmission channels).

The telegraph system, which continues to remain the sole documentary form of communications on railroads, has an important role in the management of the shipping process. The **general-purpose telegraph network**, as is well known, is divided into the switched network and the subscriber-telegraph network. The former provides a

link between the Ministry of Railways and the administrations and divisions of the railroads and the major stations, while the latter joins the rail transport subdivisions.

The switched telegraph network has a radial-node principle of construction. The trunk, railroad and departmental centers are currently equipped with automatic switching exchanges primarily of the AT-PS-PD type. The incorporation of ESK-A electronic exchanges and ESK-5 substations built using asynchronous time switching using computers is projected. Telegraph centers with a large volume of through traffic will use message switching centers in the future.

Telegraph communications are accomplished using audio telegraphic channels formed using TT-12, TT-17P, P-318M, TT-48 and other apparatus with frequency separation, as well as using physical cable circuits. More improved TT-144 apparatus with frequency separation of channels and the DUMKA with time-type separation will soon be widely employed, which makes it possible to organize 72 AF telegraph channels on a single channel.

The STA-M67, T-63 (East Germany), electromechanical RT-80 and the electronic F-1100 and F-2000 (East Germany) electromechanical telegraph apparatus are used as terminal devices. The electromechanical equipment is distinguished by enhanced productivity and reliability and better quality indicators (higher transmission speed, lower level of acoustic noise etc.) and requires less time to service. Preference will therefore be given to this apparatus in the near future.

The **real-time operational telegraph network** is also widely employed on the railroads. It is used, by way of example, for the transmission of reports in the approach of trains and freight between sorting and freight stations and between these stations and the railroad computer centers. The telegraph is also employed for the transmission of cut lists, the recording of railcar numbers etc. To the extent of the development of automated rail-transport management systems, however, telegraph information communications are being replaced with data-transmission networks.

**Data-transmission networks.** The link of the MPS computer center with the railroad, as well as the computer centers of allied railroads among each other, is accomplished through AF telephone channels and the telegraph channels of the trunk communications network. The link of the railroad center with the computers of the rail centers supporting from one to three divisions, as well as with the computers of sorting yards and the goods accounting offices, are organized on dedicated telephone and telegraph channels. The rail-center computers are linked with the goods and technical offices, depots and other subdivisions through the channels of railroad and departmental telegraph communications.

There are currently two types of data-transmission apparatus in use: low-speed and medium-speed. The data-transmission network will be developed in the near term chiefly through the utilization of the YeS computer data-transmission equipment and the organization of communications channels using K-24T, IKM-120 and other apparatus.

The real-time operational telephone communications networks are intended for the real-time control of various operational processes at all levels—from the ministry to the railroad stations and sidings. These communications are most important, and are in many cases the sole means of real-time control. The networks of the first three levels include the reporting communications networks and a large group of networks of the "[selective]" telephone system, including mobile sets. The networks of the selective telephone system interact directly with the installed telephone system networks, which are continued on the line in inter-station, siding and protected-crossing ones as well as in the target communications networks.

The development of the Kurs unified communications equipment complex to modernize existing networks of the real-time operational telephone system and to construct new ones is proceeding in accordance with the plan to develop and incorporate new equipment and progressive technology in rail transport. It is planned that the enterprises of MPS will manufacture the new apparatus. The structure of the Kurs complex basically corresponds to the extant structure and hierarchy of the networks and types of real-time operational telephone communications and the territorial distribution of the facilities of these networks. The complex includes sets of equipment for the communications of conference, selective and installed telephone communications; audible-frequency amplifiers and a KZT transmission-system apparatus; a set of devices for tone dialing; input-protection and switching devices; and, a complex of maintenance equipment.

The development and assimilation of the output of the apparatus for the Kurs complex and its incorporation into the networks will make it possible to take out of production about 70 types of technically obsolete devices in the near future and to reduce by roughly half the number of types and styles of devices used in real-time operational communications through the standardization of items and the combination of the functions of different types of existing equipment in unified telephone exchanges and unified subscriber panels for real-time operational telephone communications. The overall number of different types of functional devices and assemblies needed for building all types and styles of apparatus in the Kurs complex will be cut by roughly 2.5 times. The reliability indicators of the apparatus will be improved considerably, the materials- and labor-intensiveness of its manufacture will be reduced and operating expenses on maintenance will decline. All of this will ultimately ensure the more efficient operation of the real-time operational communications networks.

Radio communications have become more and more widespread in rail transport in recent years. In accordance with the PTE [rules for technical operation], all sections of railroads are equipped with train radio communications, which should ensure continuous, reliable two-way radio communications between the train dispatcher and the locomotive engineers within the boundaries of the dispatch sector, as well as between the locomotive engineer on the line and the duty officer at the nearest station. Radio communications are widely used at the stations in shunting and hump-yard work. In accordance with the PTE, radio communications are defined as a basic means of transmitting instructions in shunting work.

Very great demands are made of the system and equipment of railroad radio communications under contemporary conditions in terms of reliability, stability, trustworthiness, functional capabilities, expansion of the sphere of application, ease of operation etc. Taking all of these requirements into account, the Transport radio-communications system is being developed, at the foundation of which is standardized new-generation radio equipment with the widespread utilization of integrated circuits and microassemblies. The use of frequency synthesizers, microprocessors and other modern technology has made it possible to expand markedly the functional capabilities of radio stations, make them multichannel, provide for the selection of the needed working frequencies, thereby solving the problem of the electromagnetic compatibility of radio equipment at major stations and rail centers. The new radio stations, along with analog ones (telephonic mode), will transmit discrete information (remote control—remote signaling mode). They envisage the built-in monitoring of the principal parameters, which will ease the work of operational personnel.

The Transport standardized radio-communications complex includes train, station and operational-repair radio communications. The train radio communications are the most important.<sup>1</sup> It includes dispatcher line radio communications which, depending on the traffic intensiveness of the section, can be duplex with individual calling of engineers or simplex with group call-up, and the radial radio communications of the engineers of train locomotives with workers providing for train safety scattered along the line associated with train operation or passenger service. The train locomotives are equipped with RV-1 dual-band movable radio sets that provide communications with the dispatcher as well as users on the line.

RS-1 fixed radio stations that include a stub in a four-wire standard telephone channel which also includes an SR-1 control station are being installed to organize duplex line dispatcher radio communications. Contact between the dispatcher and the engineer can be accomplished in telephone mode or via the transmission of commands and reports. An automatic data-transmission mode is also envisaged. The signal can be relayed along

the line in the duplex system in the absence of a four-wire channel. Two fixed RS-1 radio stations and one fixed PRM-S receiver are being installed at stations for this.

Simplex train dispatcher radio communications are being set up on a linear principle in the meter or hectometer bands with a single common working frequency. All of the RS-6 fixed radio stations are included in the common two-line telephone channel in which the control station is also located.

The radio communications of engineers with users scattered along the line are accomplished in simplex mode at frequencies in the 151-156 MHz band with group call-up. A fixed RS-2 or portable RN-3 radio station is installed for the duty officers at the stations for this. The workstations of duty officers on sidings are also equipped with portable radio stations (RN-2). An RS-2 is installed for the depot duty officer, the managers of repair work have an RV-5 or an RV-6 and the signals operators have a portable RN-1. Movable RV-2 sets are intended for the managers of passenger trains. Working frequencies are allotted to all of the enumerated users to establish radio communications that are divided into groups within the bounds of the dispatcher sections.

RV-3 movable sets are supplied to locomotives to organize shunting and sorting radio communications, while the shunting dispatcher and yard duty officers have fixed RS-3 radio sets with two or three control panels. Shunters and their assistants are allotted portable RN-12B radio sets, while shunting workers, fitters and other workers have portable PRM-N receivers. These radio nets operate with group call-up or by open channel. The radio communications of personnel engaged in handling consists include radio nets of list workers, technical and commercial inspection stations, braking operators, freight-yard dispatchers and container-area dispatchers. These radio nets are organized using portable RN-3 and RN-12B sets.

**Operational repair radio communications include** dispatcher line (permanently operating and temporary) repair radio communications, radio communications within the work front and operational-repair service radio communications. The organization of dispatcher line radio communications is analogous to the organization of this type of radio communications in the PRS system. RS-6 radio stations and the SR-34 control station are used here. Due to the specific technological features of the various services, however, the junctures of the dispatcher circles may not coincide, and the dispatchers could be located in different territorial areas. The opportunity of utilizing two SR-34 control stations and including them at any point in the line is thus envisaged to take this into account.

A fixed RS-4 radio station is set up and included in a wire channel to organize temporary dispatcher repair radio communications where operations are being conducted. The dispatcher also has an SR-2 control station,

which can be moved to a distance of up to 300 kilometers from the RS-4. The radio communications operate in simplex mode with group call-up. Control of the RS-4 radio station is accomplished on a wire channel using two-frequency coded signals.

Radio communications within the workfront are organized in simplex mode with group call-up. Subscribers are allocated RN-12 or RN-14 portable radio sets. The serviceability of the channel is monitored via the periodic issue of audio-frequency signals and their audibility at the receiving end. The possibility of including sirens or using UGO-1 loudspeaker warning devices to warn workers of approaching trains is also envisaged.

The operational dispatcher service radio communications are organized in the decimeter band using 3-4 equally accessible duplex channels and individual call-up of users. Access to users of the railroad ATS and their call-up of mobile users from mobile facilities is envisaged in the radio network. The radio net includes RS-7 fixed and RV-8 movable radio stations. Radio communications are established in semi-duplex mode on the radial-linear principle.

The Transport radio-equipment complex also includes auxiliary equipment including tunnel equipment for organizing radio communications in tunnels along guide lines, standardized remote-control devices for the transmission of discrete information along simplex channels, a line splitter for duplex systems of train radio communications etc.

The widespread application of radio-communications equipment is facilitating a marked increase in the efficiency of rail-transport operations, a rise in the traffic capacity of lines and the handling capabilities of stations, growth in labor productivity and improvements in traffic safety. The use of radio communications at sorting yards handling 500 railcars a day, by way of example, provides an economy of operational expenditures of roughly 175,000 rubles. One-time expenditures of 260,000 rubles also decline therein and some 58 people are freed up from the operational staff. The annual economic impact is roughly 215,000 rubles, since the opportunity arises of handling an additional 2 trains a day in the receiving yard. The annual savings from train radio communications on a two-line section 120 kilometers long, for example (60 pairs of freight and 8 passenger trains), totals 48,000 rubles.

The use of 2 fixed and 12 portable radio sets at a railcar technical inspection station handling 4,000 railcars a day provides an annual economic impact of 37,000 rubles and facilitates a reduction in train maintenance times and the more rational utilization of labor resources. According to VNIIZhT [All-Union Scientific Research Institute of Rail Transport] calculations, the economic efficiency from the use of a single radio station for train radio communications is 900 rubles, one fixed station 4,500 rubles and one portable one, 2,500 rubles.



The widespread utilization of the third-generation communications equipment being supplied by industry, as well as being developed and manufactured at MPS enterprises, in railroad communications systems will make possible a marked increase in the efficiency of railroad communications networks and will actively assist in improving the operations of the steel mainlines.

#### Footnotes

1. See "ZHELEZNODOROZHNIY TRANSPORT, 1985. No 8.

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#### Poor State of Rail Bridge Repair

18290062a Moscow PUTI PUTEVOYE

KHOZYAYSTVO in Russian No 12, Dec 87 pp 1-3

[Article by A.P. Yariz, deputy chief of the Lines Main Administration (MA) of MPS (Ministry of Railways): "Putting an End to Irresponsibility"]

[Text] One of the paramount tasks facing bridge builders is to ensure the timeliness and high quality of the routine upkeep and capital repair of the structures. After all, the discussion concerns first and foremost the uninterrupted flow of train traffic.

What is the state of the "bridge facilities" of the rail network?

In 1983 the number of defective bridges limiting the passage of contemporary loads was 1,981, and this year it is 1,621. It has declined substantially through the capital repair of the structures—this is reassuring. At the same time, however, the number of bridges with defects whose further development will lead to limitations in freight capacity and the untimely breakdown of the structures is growing in an intolerable manner. Four years ago there were 1,281 such bridges, while today there are 1,787. Those railroads where routine upkeep is poorly handled will soon face the necessity of increasing capital repairs sharply. They include first and foremost the Moscow, October, Sverdlovsk, Kemerovo and some other railroads.

Since 1982, in accordance with MPS Directive No 9768, the upkeep of the most critical structures should be under the direct control of the deputy chiefs of the railroads. The state of many such bridges and tunnels is not improving, however, and the flaws of many years are not being removed. The standards for annual bridge inspection have not been fulfilled for many years running by the deputy chiefs of the Sverdlovsk, Azerbaijan, Central Asian, October, Transbaykal, Moscow and West Siberian railroads. These executives tolerate the inactivity of the workers of line sections, at best noting the

shortcomings in documents but taking no steps to eliminate them. One paradoxical instance: on the Transcaucasus Railroad, the worst maintained of all those structures inspected are those that railroad Deputy Director I.N. Lomidze is obliged to inspect annually. The same measures are repeated year after year in the bridge inspection documents of the Sverdlovsk, Far Eastern, Moscow and Tselino railroads, and only the deadlines change.

The managers of railroad divisions and track services do not always manage to handle their official standards for inspecting structures and often do not investigate the results of periodic inspections. The chiefs of line sections do not report quarterly on the elimination of flaws.

The defects detected by the bridge stations of the Lines Main Administration are being eliminated very slowly. Matters are especially bad on the Gorkiy, East Siberian, Moscow and Volga railroads. On the Transbaykal they are basically removing flaws on bridges that were inspected in 1984-86. On the Transcaucasus, Volga, Kuybyshev, Alma-Ata, Sverdlovsk, East Siberian, Moscow, Gorkiy, Southwestern, Lvov and Far Eastern railroads, there are structures where defects and flaws were found as early as in 1981-82. A multitude of defects in the metal superstructure framework (cracks and pits in the chords of beams in the roadway; plates and diagonal braces that are rusted through with cracks and pits; weak riveted joints). The condition of the expansion joints has long remained uncorrected on the Far Eastern, Kemerovo, East Siberian, Sverdlovsk and Lvov railroads. The railroad bridge stations moreover do not follow up on the fulfillment of the measures proposed by the central bridge stations.

The irresponsibility is coming to the point where serious defects that have not been fixed for many years accumulate, and work of a routine nature becomes capital repairs, increasing expenditures.

The managers of some line sections, ignoring MPS directives, are continuing to divert bridge teams to other work. Especially guilty of this are the Lvov, West Siberian, Krasnoyarsk and Moscow railroads. There are more than enough examples of the poor organization of labor where the systematic inspection of bridges by line teams, bridge foremen and line-section managers has not been properly organized and where the working bridge shops have been reduced without justification. There were instances of this on the Krasnoyarsk and West Siberian railroads. On the Serpukhovo line section of the Moscow Railroad, where the state of affairs in the routine upkeep of artificial structures is extremely unfavorable, they even got it into their heads to reduce the bridge foremen.

The fact that the state of track on bridges and their approaches is also worsening is also cause for alarm. The bridge-testing stations of the Lines MA deemed it essential to limit speeds on some 17 bridges in seven railroads

in 1986 due to this. The same thing happened this year on 12 bridges of four mainlines. There are "record holders" here as well: the Moscow and West Siberian railroads.

The state of affairs with bringing the roadbeds into conformity with standards is also depressing. There are still very few improvements here. In capital repairs on some railroads, they still put the track on bridges without trimming the excess ballast under the tie bearing surface. The cantilevers of the reinforced-concrete bridge spans of some bridges on the Koshurnikovo section of the Krasnoyarsk Railroad proved to be overloaded with ballast, while in book PU-13 the line-section chief and his deputy made no observations regarding it. On 10 bridges with cantilevered awnings on the Kotelnaya line section of the Gorkiy Railroad, the depth of the ballast under the ties reached 105 cm [centimeters], which is unacceptable.

In 1983 there were 4,211 structures with violations of depth of the roadbed ballast, and now there are 4,732. Their number has increased by 192 on the Transbaykal, 161 on the Gorkiy, 140 on the Far Eastern and 128 on the Alma-Ata railroads.

The bridge workers are far from doing everything to see that traffic safety is ensured on artificial structures. One need not go far for examples. There exist clearance-monitoring devices (CMD) to avert bridge damage. The plans for their installation are not being fulfilled year after year, however, on the Northern, Lvov, West Kazakhstan, Gorkiy and a number of other railroads.

The fact that the plan for the capital repair of structures in 1986 for the network overall was 103.4-percent fulfilled in 1986 is cause for satisfaction, of course. The targets and socialist obligations were overfulfilled at 131 percent on the Northern (Deputy Chief of Line Services V.N. Shiryagin), 110 on the October (N.A. Nikolayev), 113 on the Transcaucasus (A.Sh. Zibizbadze), 111 on the Central Asian (Sh.Z. Nishanbayev), 104 on the Krasnoyarsk (V.A. Loktev) and 120 percent on the Transbaykal (V.N. Serov) railroads. The Belorussian, Moscow, Odessa, North Caucasus and Kuybyshev railroads also operated well.

At the same time, notwithstanding the extant successful situation, favorable conditions and material and technical resources, the capital-repair for structures plan was not fulfilled on the Lvov (B.I. Startsev), West Kazakhstan (M.M. Ulitchev), Alma-Ata (T.B. Mamenov) and West Siberian (V.A. Franchik) railroads.

The disruptions are first and foremost the fault of the managers of the line services. The subcontractors also need to be reproached, however. Railroad bridge- and tunnel-repair organizations only fulfilled the plan of operations for the Lines MA at 94.2 percent. This means that the overall overfulfillment was achieved by having the operational workers considerably increase their work

volume with their own manpower. Out of the 30 railroads that have bridge and tunnel organizations of the Capital Construction MA, the plan was 22-percent underfulfilled. They managed 75 percent of the yearly target on the East Siberian, 71 percent on the West Siberian (MSP [bridging train]-429), 65 on the Moldavian (MSP-1), 56 on the Dnieper (MSP-57) and 49 percent on the Tselino (MSP-65) railroads. It is difficult to maintain the good condition of bridges and tunnels, especially those that are over 100 years old, in such a climate.

Appropriations for the capital repair of structures were increased 7 percent for 1987. Not all have fulfilled the plan for eight months, first and foremost the Baltic (45 percent), Lvov (51), Moldavian (49), Southern (49), Donetsk (48), Azerbaijan (47), Southeastern (40), Tselino (51) and Baykal-Amur (36 percent) railroads. Funds should be taken from them and sent to those railroads that have met the targets: the Northern, Transbaykal, Far Eastern and others.

Accelerating the replacement of metal structural elements, especially those with old rated norms and those that are defective, is taking on the main role. It is obvious that bridges that have been in service for 100-120 years are too old and that they must be replaced as quickly as possible, giving preference to high-traffic sections.

The installation of new metal bridge structural elements has grown to 35,000 tons a year since 1984. The requests of the railroads are almost completely satisfied. The second part of the task must now be resolved: making the replacement of structural elements more active. And this is first and foremost the responsibility of the railroads themselves and their bridge organizations.

The total volume of replacements has increased in recent years. Whereas 9,700 tons were replaced in 1980, the amount was 14,800 tons in 1985. There are no bridge spans on the railroads that have remained for years "without traffic." The rate of such work is too low, however. Only 1,800 tons of the plan of 2,800 tons in the yearly plan were replaced on the Moscow Railroad in 1986; these figures were 1,700 and 0 on the Northern, 600 and 100 tons on the Lvov and 1,600 and 1,000 tons on the Southwestern railroad respectively.

The bridging trains of the Gorkiy, Northern, Lvov, Southeastern and a number of other railroads disrupted the replacement of bridge spans last year. The same railroads are among the laggards this year as well.

It is intolerable that many bridging organizations are diverted to work not connected with the repair of engineering structures. This outside utilization totals 22 percent of the total for MPS overall. It is especially great for MO-8 of the Alma-Ata (35 percent), the Spetsmostotrest [Special Bridge Construction Trust] of the Moscow (26), TMO-1 (22), TMO-2 (22), MSP-21 (38),

MO-7 (28), MSP-1 (28), MSP-5 (52), MSP-65 (60), MO-9 (51) and MSP-18 (37 percent). As we see, even without an increase in investment funds there are great reserves here. It is furthermore extremely necessary to reinforce the productive capacity of the bases. Then there will not be lapses in the overhaul process. The Lines MA is ready actively to finance the development of the bases of bridge organizations through including those expenditures in the estimates for bridge reconstruction.

One cannot be reconciled to the insignificant amount of independent manufacture of structural elements in the railroad organizations, and first and foremost reinforced-concrete spans. MSP-3 of the Southeastern, MSP-423 of the West Siberian, MSP-65 of the Tselino and a whole series of others are not engaged in this at all. In the face of an average annual need for 10,000-15,000 cubic meters, barely 5,000, and in the best case 7,000, cubic meters of reinforced concrete is poured each year.

It is no secret to anyone what difficulties the operational workers are experiencing with the bridge planks. Their production is declining, and over the last 10 years deliveries have dropped by almost 1.5 times. Defects in bridge planks already exceed 10 percent throughout the network, and it is even higher on some railroads. It is therefore essential to put all bridge planks into use and to install only slabs of non-ballast bridge roadbed on new spans. Unfortunately, the Lines MA has no enterprises at its disposal where the mass production of these structural elements could be organized. The Kiev Reinforced-Concrete Ties Plant puts out very few of them. The Construction MA should take part of this job onto itself.

In the face of the importance of replacing span elements of the bridges, we must also remember the possibility of reinforcing them. There exist (not a few) good spans with defective roadbeds. There have been speed limitations in effect for many years due to this on structures of the Dnieper, Gorkiy and many other railroads. The railroad bridging trains for some reason do not undertake repairing them. Replacing such structural elements without their having served out the designated time period is impossible, and it would moreover contradict common sense and economic considerations. The bridge workers must therefore resurrect the traditions of those years when strengthening was one of the basic types of bridge reconstruction.

So as to bring order to the structures according to plan, it is essential to increase the burden on the subdivisions of the road-building trusts. A major role herein also undoubtedly falls to the line services, which are obliged to prepare planning-estimate documentation, strive for the timely and comprehensive preparation of metal structural elements, allot funds for materials etc. The Lines MA also sees this as its task.

The Lines MA is increasing the funding of railroads for capital repairs by 12 percent for 1988 compared to this year. All of this funding is intended for the railroad bridge organizations.

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#### **Rail Minister Directives to Branch**

18290062b Moscow PUT I PUTEVOYE

KHOZYAYSTVO in Russian No 12, Dec 87 pp 11-12

[Unattributed article: "A Program of Action is Projected"]

[Text] Minister of Railways N.S. Konarev, according to materials of a collegium session, has promulgated Directive No. 386u of 5 Sep 87, in which Deputy Minister N.K. Isingarín, Lines Main Administration [MA] Chief N.F. Mitin and the chiefs of the railroads and railroad divisions are obliged to take decisive steps radically to improve the current state of the track and ensure the unimpeded and safe passage of trains first of all through the efficient utilization of existing machinery and equipment, the strict observance of procedures for track inspection and the immediate elimination of all flaws detected along with the unwavering fulfillment of the stipulated technology for the execution of operations. **Chief attention herein should be concentrated on creating the essential conditions for the highly productive labor of workers engaged in track maintenance, replenishing and training key personnel among track fitters, team leaders and railroad foremen and resolving the social and domestic issues of track workers.**

The Main Traffic Administration and the chiefs of the railroads and divisions are called upon to provide timely technological "windows" for the maintenance of track in the train traffic schedules, require of the dispatcher apparatus of the railroads and divisions the maximum utilization of the intervals between trains to work with track machinery and equipment and the motorized rail transport accomplishing the delivery of people and the shipment of materials for track structures, as well as the fulfillment of urgent repair operations.

The establishment of material incentives for the dispatcher apparatus of the railroad divisions, shunting dispatchers and station duty officers has been prescribed for the maximum utilization of time free of trains to repair and maintain track and other technical facilities.

Moscow Railroad Chief Comrade Paristyy and Moscow Railroad Kashirskiy Division Chief Comrade Kozyrev have been ordered to consider the state of the track facilities of the Kashirskiy Division and take concrete steps to eliminate existing shortcomings; ensure the development of plans for the social development of every enterprise and render the necessary assistance to line sections; resolve all issues connected with the fulfillment of the plan for track operations and the provision of sections with materials for track structures, tools, spare parts, fuels and lubricants, the issue of special clothing and the delivery of people to the workplace and



back; take steps to improve the housing conditions of workers on line sections and supply them with foodstuffs and industrial commodities and medical care and to create suitable conditions for working and everyday living.

All chiefs of railroads and divisions should, when conducting work to replenish and reinforce key personnel in track facilities, **organize the training of track team leaders and railroad foremen with a three-month training period, preserving their pay level over that time.** The practice of training line-section workers in **second and third professions** should be widespread, and the rates of track fitters should be raised in timely fashion in accordance with their qualifications and the nature of the work they do.

Every line section should analyze the utilization of the wage fund for the upkeep of track, the payment of bonuses for work quality to fitters, team leaders and railroad foremen, immediately eliminate shortcomings that are revealed and encourage in every way the workers ensuring the reliable state of the track. **The establishment of the maximum possible pay scales, as a rule, for track team leaders, railroad foremen and section chiefs is recommended.**

**The manufacture of mobile and fixed heating stations** must be organized on line sections and at other enterprises for track teams working on lines that are completing line sections in 1988.

Deputy Minister N.K. Isingarin and Lines MA Chief N.F. Mitin are ordered to **strengthen exactingness toward railroad executives for the fulfillment of MPS Order No. 40/Ts of 17 Sep 84 titled "The Construction of Housing and Domestic-Facilities Accommodations for Track Machinery Stations and Railroad Line Sections"** and listen regularly to the reports of railroad and division executives on the realization of the assigned targets for housing construction.

Chiefs of railroads and divisions are obliged by the directive of the minister to **consolidate official living space occupied by track workers for the line sections and the PMS [track machinery stations].**

In accordance with the Directive, the Track and Planning and Economic Main Administrations and the Civil Structures and Water-Supply, Accounting and Finance Administrations are preparing proposals **on the granting of benefits for the payment of living space and municipal services to railroad foremen, track team leaders and trackwalkers of railroad track and artificial structures, as well as for siding duty officers, track-machinery engineers and the operators of detachable inspection equipment that are living in buildings belonging to the railroad.**

Deputy Minister and Material-and-Technical-Supply Main Administration Chief G.M. Korenko, for the purpose of ensuring the repair of electrical and hydraulic

track tools, is ordered to **bring the annual delivery of spare parts to the railroads to 115,000 rubles according to the stipulated product range beginning in 1988** and to take steps to increase deliveries of electrical and hydraulic tools, and first of all rail-cutting and rail-drilling machinery, hydraulic track adjusting and de-warping devices and gas-powered generators, to stipulated standards.

The chiefs of railroads and divisions are ordered to **ensure the paramount allocation of gasoline and other fuels and lubricants for the work of track machinery and equipment.**

Lines MA Chief N.F. Mitin and VNIIZhT [All-Union Scientific Research Institute of Rail Transport] Director A.L. Lisitsyn are ordered to take steps in the first half of 1988 to **raise the quality of insulation materials for rail joints** and increase their reliability and longevity.

The Workers' Supply MA and the chiefs of railroads and divisions are obliged to review the parameters for the operations of stores at line stations, figuring them in such a way that the workers of track facilities and other services who spend their workday on the lines can obtain food products and consumer goods in the morning and evening hours, as well as **organize the sale of food products to the workers of track teams by order at times convenient for them.** A system to provide the workers of rail transport that live on the lines and at line stations with consumer goods by order and on credit must be incorporated everywhere on the railroads, the network of railcar-stores must be expanded and their travel on sections no less often than twice a month must be ensured.

The Locomotive Facilities MA, in conjunction with the managers of the railroads and divisions, is obliged to take steps to provide all track workers living on the line or at line stations with the **necessary quantity of fuel.**

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#### Rail Ministry Appointment

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KHOZYAYSTVO in Russian No 12, Dec 87 p 20

[Unattributed news item: "Appointments"]

[Text] Igor Sergeyevich Finitskiy has been designated chief of the Technical Production Department for the Repair and Modernization of Track Facilities for the Main Lines Administration of MPS [Ministry of Railways]. The new department was formed in connection with the creation of the Rempumash Production Association.

Igor Sergeyevich was born in 1945 and has completed MIIT [Moscow Order of Lenin Red Banner Institute of Rail-Transport Engineers] in the field of engineer-mechanic. He worked as a technician and instructor at the All-Union Scientific Research Institute of Transport and Agricultural Machine Building, was the chief mechanic of OPMS-103 of the Moscow Railroad, an engineer and scientific associate of the VNIIZhT [All-Union Scientific Research Institute of Rail Transport] and chief industrial engineer of the

Rolling-Stock Repair and Spare-Parts Production Main Administration of MPS. He headed the Mechanization Department of the Lines Main Administration in 1986-87.

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